

Muscogee Creek Nation Safe Streets for All (SS4A)

COMPREHENSIVE SAFETY ACTION PLAN

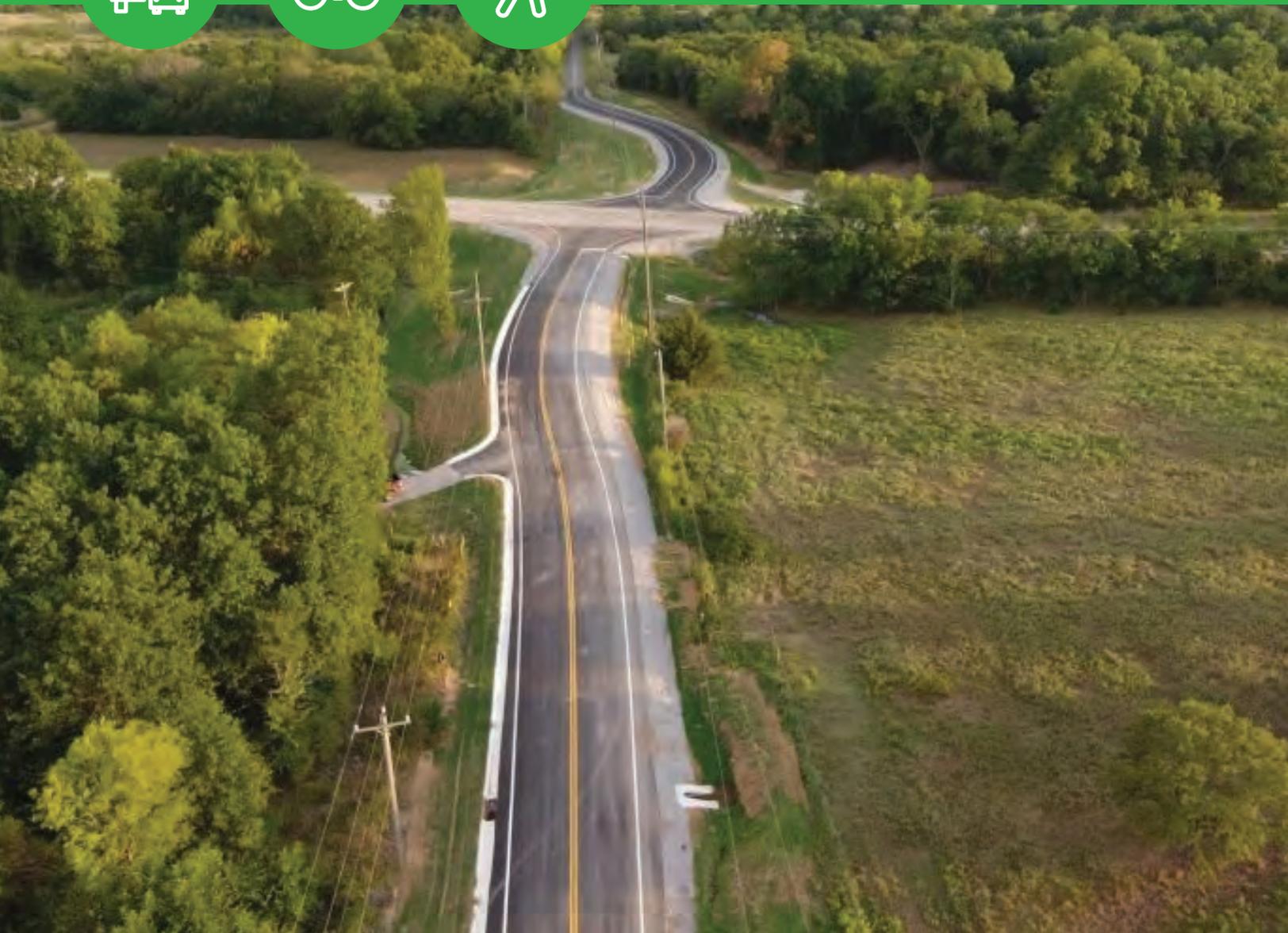


Table of Contents

| | | | |
|---|-----------|--|-----------|
| LIST OF FIGURES | 3 | 4 PUBLIC OUTREACH AND STAKEHOLDER ENGAGEMENT | 46 |
| LIST OF TABLES | 4 | 4.1 Approach | 47 |
| APPENDICES | 5 | 4.2 Strategies..... | 49 |
| LIST OF ACRONYMS | 6 | 4.3 Findings..... | 52 |
| MUSCOGEE CREEK NATION RESOLUTION | 7 | 5 DISADVANTAGED COMMUNITY CONSIDERATIONS | 55 |
| EXECUTIVE SUMMARY | 8 | 5.1 Analysis and Metrics | 56 |
| 1 INTRODUCTION | 11 | 5.1.1 Areas of Persistent Poverty | 57 |
| 2 OVERVIEW: MUSCOGEE CREEK NATION | 14 | 5.1.2 Non-dominant Population | 59 |
| 2.1 Geography and Land Use..... | 15 | 5.1.3 Vehicle Ownership | 60 |
| 2.2 Demographics..... | 16 | 5.2 Strategies for Underserved Community Outreach..... | 62 |
| 2.2.1 Population Density by County | 17 | 6 EXISTING PLANS, POLICY, AND PROCESS REVIEW | 63 |
| 2.2.2 Additional Demographic Data: Summary of Population and Income Distribution | 18 | 6.1 Existing Relevant Muscogee Creek Nation Plans..... | 64 |
| 2.3 Transportation Network and Infrastructure..... | 19 | 6.2 Existing Federal/Tribal Plans | 65 |
| 2.3.1 Shoulder Width..... | 22 | 6.3 Existing Oklahoma Statewide Plans | 66 |
| 2.3.2 Transit Facilities | 23 | 6.4 Existing County Level Plans..... | 67 |
| 2.4 Transportation Authority and Governance Structure..... | 25 | 6.5 Memorandums of Understanding (MOU) & Agency Agreements..... | 68 |
| 2.4.1 Authority | 25 | 6.6 Key Findings | 69 |
| 2.4.2 Project Governance | 26 | 6.7 Recommendations for Transportation Safety..... | 70 |
| 3 SAFETY ANALYSIS | 27 | 7 PROJECT PRIORITIZATION AND RECOMMENDATIONS | 71 |
| 3.1 Data Collection..... | 28 | 7.1 Prioritization Process..... | 72 |
| 3.2 Crash Analysis..... | 29 | 7.2 Safety Strategies and Countermeasures..... | 79 |
| 3.2.1 Total Crashes by Severity | 29 | 8 PROGRESS AND TRANSPARENCY | 82 |
| 3.2.2 Crash Types..... | 31 | 8.1 Overview | 83 |
| 3.2.3 Contributing Factors (Crash Reasons) | 34 | 8.2 Integration of Safety into All Business Practices..... | 84 |
| 3.2.4 Crashes by Demographic Patterns, Area Type, and Region | 36 | 8.2.1 Policies and Guidelines..... | 84 |
| 3.2.5 Crashes by County | 38 | 8.2.2 Safety Training | 85 |
| 3.2.6 Pedestrian and Bicycle Crashes | 40 | 8.2.3 Emergency Preparedness..... | 85 |
| 3.2.7 Crash Heatmaps | 41 | 8.3 Advocacy and Collaboration..... | 86 |
| 3.2.8 High Injury Network (HIN) | 43 | 8.4 Funding..... | 87 |
| | | 8.5 Data and Performance Measures..... | 88 |
| | | 8.6 Transparency and Reporting..... | 88 |

List of Figures

| | |
|--|----|
| Figure 1 - Muscogee Creek Nation's Jurisdiction Boundaries..... | 15 |
| Figure 2 - Population Density by County (2017-2021)..... | 18 |
| Figure 3 - Main Roadway Network Functional Classification Percentages..... | 19 |
| Figure 4 - Main Roadway Network Functional Classification | 21 |
| Figure 5 - Service Areas of Different Transit Providers in Muscogee Creek Nation..... | 24 |
| Figure 6 - Total Crashes by Severity (2017-2021) - Entire Muscogee Creek Nation | 30 |
| Figure 7 - Total Crashes by Crash Type - Entire Muscogee Creek Nation | 31 |
| Figure 8 - Crash Types by County | 32 |
| Figure 9 - Main Crash Types in Roadway Related and Intersection Related Crashes | 33 |
| Figure 10 - Pedestrian and Bike Crashes Severity Level Distribution in the Nation (2017-2021) | 40 |
| Figure 11 - Total Crashes Heatmap | 41 |
| Figure 12 - Pedestrian and Bike Crashes Heatmap | 42 |
| Figure 13 - All Crashes High Injury Network | 44 |
| Figure 14 - Pedestrian and Bike Crashes High Injury Network | 45 |
| Figure 15 - Defined Regions in the Nation | 48 |
| Figure 16 - Areas of Persistent Poverty | 57 |
| Figure 17 - Historically Disadvantaged Communities | 58 |
| Figure 18 - Non-dominant Population | 59 |
| Figure 19 - Household Vehicle Ownership | 61 |
| Figure 20 - Prioritization Process | 74 |
| Figure 21 - Proposed Hotspot Locations – With INCOG Boundaries and Road Classifications | 77 |
| Figure 22 - Proposed Hotspot Locations – With High Injury Network | 78 |

List of Tables

| | |
|--|----|
| Table 1 - Population Density by County | 17 |
| Table 2 - Primary Contributing Factors in Crashes (≥5% Contribution) | |
| – Entire Muscogee Creek Nation | 35 |
| Table 3 - Crash Distribution by County and Severity Level | 39 |
| Table 4 - Primary Datasets for Disadvantaged Community Considerations | 56 |
| Table 5 - Prioritization Criteria and MOEs | 73 |
| Table 6 - Proposed 23 Hotspot Locations (Combined VRU and non-VRU) for Roadway Segments | 75 |
| Table 7 - Proposed 29 Hotspot Locations (Combined VRU and non-VRU) for Roadway Segments | 76 |
| Table 8 - Systemwide Safety Improvements and Mitigation Strategies | 81 |

Appendices

Appendix A - Supplementary Data on the Muscogee Creek Nation Overview

Appendix B - Supplementary Data on the Safety Analysis

Appendix C - High Injury Network Development Methodology

Appendix D - Survey Results and Meeting Summaries

Appendix E - Existing Plans and Document Review Analysis

Appendix F - Project Prioritization Criteria MOE Memo

Appendix G - Rating and Ranking Process for Hotspot Location Selection and Project Prioritization

Appendix H - Safety Issues – Hotspot Locations, Recommended Countermeasures and CMF

Appendix I - SS4A Safety Action Plan Reference Documents

List of Acronyms

AADT – Annual Average Daily Traffic
AASHTO – American Association of Highway and Transportation Officials
ACS – American Community Survey
BIA – Bureau of Indian Affairs
CMF – Crash Modification Factors
CPT – Cimarron Public Transit
CSAP – Comprehensive Safety Action Plan
DOT – Department of Transportation
FHWA – Federal Highway Administration
GIS – Geographic Information System
HIN – High Injury Network
IIJA – Infrastructure Investment and Jobs Act
INCOG – Indian Nations Council of Governments
KATS – Ki Bios Area Transit System
MCN DOT – Muscogee Creek Nation Department of Transportation
MCT – Muskogee County Transit Service
MMUCC- Model Minimum Uniform Crash Criteria
MOU – Memorandum of Understanding
MTTA – Metropolitan Tulsa Transit Authority
NHTSA- National Highway Traffic Safety Administration
NOFO – Notice of Funding Opportunity
ODOT – Oklahoma Department of Transportation
OHSO – Oklahoma Highway Safety Office
PDO – Property Damage Only
QR – Quick Response
SRTS – Safe Routes to School
SS4A – Safe Streets and Roads for All
TAP – Transportation Alternatives Program
TTP – Tribal Transportation Program
URL – Uniform Resource Locator
USDOT – U.S. Department of Transportation
VRU – Vulnerable Road User

An aerial photograph of a large steel truss bridge spanning a wide, muddy-brown river. The bridge's intricate lattice structure is clearly visible, and its shadow is cast onto the water below. The river is flanked by dense, lush green forests that extend to the horizon under a clear sky. The text "Executive Summary" is overlaid in white on the bridge's structure.

Executive Summary



Executive Summary

The U.S. Department of Transportation (USDOT) Safe Streets and Roads for All (SS4A) program was created by the 2021 Infrastructure Investment and Jobs Act (IIJA), aka Bipartisan Infrastructure Law and provides \$5 billion over 5 years to fund community-led projects that address the preventable crisis of deaths on our nation's roads, streets, and highways. It provides grants to local, regional, and Tribal communities for planning, demonstration, and implementation activities as part of a systematic approach. Under the SS4A Program, one of the funded grant opportunities is a planning grant for the development of a Comprehensive Safety Action Plan OR Safety Action Plan, which provides the basis for supplemental planning, demonstration, and implementation grants.

The Muscogee Creek Nation Department of Transportation (MCN DOT) applied for and was subsequently awarded funding to develop an SS4A Comprehensive Safety Action Plan in 2024. The Plan was led by the MCN DOT. A project oversight team was formed to provide vision, guidance, direction with WSB as the lead consultant.

Document & Data Collection and Analysis

Existing plans, relevant plans, studies, and other transportation safety documents were collected and reviewed. Additionally, a 5-year crash history, and roadway inventory data from Oklahoma Department of Transportation (ODOT) were collected and analyzed. Primary factors contributing to crash occurrences were identified. Based on the distribution of crashes, a High Injury Network (HIN) was identified which includes 100% of fatal crashes, 89.39 % of incapacitating injury crashes and 61.38% of non-incapacitating injury. The HIN provides Muscogee Creek Nation with a broad roadmap for investment and focus, to achieve its goal of significantly reducing fatal and serious injury crashes.

Public Outreach and Stakeholder Engagement

To provide the most opportunity for the public and stakeholder participation, the Muscogee Creek Nation geographic area was divided into four regions. A round of stakeholder and public meetings was conducted in each region in October 2024 to present the existing conditions

analysis and to solicit feedback and input. A survey and comment map were used to gather information from stakeholders and the public. A second round of stakeholder and public meetings were conducted in March 2024 to provide an update and receive public feedback. A summary and review of all stakeholders and public input was provided and additional input was documented. The Muscogee Creek Nation crash hot spots, and the HIN were described as well as the project and strategy prioritization process. Each round of meetings was documented with a summary report. Public and stakeholder outreach consisted of a project website, meeting flyers, email invitations, postcards, newspaper ads, and social media posts.

Plan Development: Project Prioritization

A set of prioritization criteria was established, considering factors such as safety, community engagement, proximity to certain locations/venues, vulnerable road users, synergy with other projects, traffic volume, and roadway functional classification. All roadway segments and intersections were prioritized based on these criteria. The plan has identified both location-specific and systemwide improvements. One criterion gave greater emphasis to non-interstate and non-freeway roadway segments. An in-depth review of the top 20 roadway segments and intersections was conducted, identifying specific opportunities to enhance safety for these high-priority areas. Priority was assigned to roadways and intersections outside of the Indian Nations Council of Governments (INCOG) boundary, and those not part of the Interstate or freeway systems.

The goal of the Muscogee Creek Nation Safety Action Plan is aimed at reducing and eliminating fatal and serious injury crashes for all roadway users in the Nation. The safety improvement strategies and projects in the Plan address significant transportation safety risks that can be applied during various time frames over the next 20 years. The USDOT has described seven components of a successful Safety Action Plan in order for the Nation to be eligible for supplemental planning/demonstration activities. The seven components are listed below as well as described throughout in the Plan:

| | |
|---|--------------------------------------|
|  | Leadership Commitment & Goal Setting |
|  | Planning Structure |
|  | Safety Analysis |
|  | Engagement & Collaboration |
|  | Policy & Project Changes |
|  | Strategy & Process Selections |
|  | Progress & Transparency |

The Plan was adopted by a Muscogee Creek Nation resolution in May 2025. It is posted on the Muscogee Creek Nation website, indicates how progress is measured over time and is reviewed annually by the Muscogee Creek Nation Oversight Committee. The fatal and serious injury crash percentage reduction goals, for the Nation, by 2045 are consist of the following:

- **20 percent reduction by 2030**
- **50 percent reduction by 2035**
- **75 percent reduction by 2045**

Introduction



CHAPTER 1 HIGHLIGHTS

- Uses SS4A funding to address rural, high-risk roadway conditions
- Applies FHWA's Safe System Approach and 4 E's framework
- Combines data analysis and community input to identify crash hotspots
- Prioritized improvements for high-crash areas and vulnerable users
- Emphasizes coordination within MCN DOT and alignment with other efforts
- Reflects a long-term vision for safer, more roads



Introduction

Safety is a priority for the Muscogee Creek Nation as they work to protect the well-being of their citizens, visitors, and communities traveling throughout the reservation. Recognizing the need to address high-risk areas and improve roadway conditions, Muscogee Creek Nation applied for federal funding through the SS4A grant program. Through this grant, Muscogee Creek Nation secured resources to develop a comprehensive safety action plan that will guide future investments and help reduce serious injuries and fatalities on their transportation network.

The SS4A Safety Action Plan for the Muscogee Creek Nation aims to enhance roadway safety, reduce fatal and serious injury crashes, and promote access to safe transportation within the Nation. This plan primarily addresses safety concerns in rural areas with limited infrastructure and high-risk conditions within the Nation's boundaries.

Building on previous safety initiatives and grounded in the Federal Highway Administration (FHWA) Safe System Approach, this SS4A Safety Action Plan includes key safety strategies that align with the FHWA "4E's" – Engineering, Education, Enforcement, and Emergency Services.

A key aspect of the SS4A Safety Action Plan is the integration of data-driven analysis and public input. By analyzing crash data to identify high-risk "hotspot" locations and incorporating feedback from the public and stakeholders, the plan targets specific areas of concern and proposes mitigation countermeasures to address existing safety issues at and around these locations. This collaborative approach ensures that solutions are community-specific and address the most pressing safety issues. The plan outlines best practices and safety protocols to guide long-term efforts. Locations with significant safety concerns, identified through data analysis and community input, are prioritized for immediate safety improvement considerations.



The plan addresses high-crash locations, including roadway segments and intersections with high rates of fatal and serious injury crashes, while also accounting for pedestrian and bicycle crashes to protect vulnerable road users. Factors such as, community input, proximity to key sites, and alignment with other projects were also considered in identifying locations with safety concerns. The SS4A Safety Action Plan involves close coordination with the MCN DOT to ensure the success of the plan, emphasizing making the Nation’s roadway safer for all users.

USDOT outlines seven key components required for a successful Safety Action Plan, which are necessary for a Nation to be eligible for supplemental planning and demonstration activities. The specific sections/pages where each of these components is addressed within the plan are summarized in a reference table provided in **Appendix I**. By following the SS4A program’s requirements, the Muscogee Creek Nation is committed to preventing traffic-related tragedies and enhancing roadway safety. This plan reflects a long-term vision of reducing crashes, particularly those involving fatalities and serious injuries.

Overview: Muscogee Creek Nation

CHAPTER 2 HIGHLIGHTS

- Muscogee Creek Nation spans 4,872 square miles in eastern Oklahoma with a growing population now over 100,000
- Road network includes 11,240 miles—3,435 miles of main roads and 7,805 miles of local roads
- Most roadways (95%) have low traffic volume; shoulder width is inadequate on many rural and local roads
- Public transit includes fixed and demand-response services via Muscogee Transit, KATS, CPT, MCT, and MTTA
- Governance is led by the Muscogee Creek Nation Tribal Council and DOT with support from federal/state partners
- An Oversight Team and WSB consultants collaboratively developed the SS4A Safety Action Plan

Overview: Muscogee Creek Nation

2.1 Geography and Land Use

The Muscogee Creek Nation is in eastern Oklahoma, covering an approximately **4,872 square mile** area. It is home to an estimated population of **814,000 people**, with a significant Native American population, making it one of the largest federally recognized tribes in the United States.

The Nation spans a wide geographic area, with much of its territory classified as rural, and is distributed across multiple counties, including those entirely within its boundaries: Okmulgee, McIntosh, and Okfuskee. The Muscogee Creek Nation's jurisdiction also extends into portions of Hughes, Muskogee, McIntosh, Seminole, Tulsa, Wagoner, Rogers and Mayes Counties (as shown in **Figure 1**).

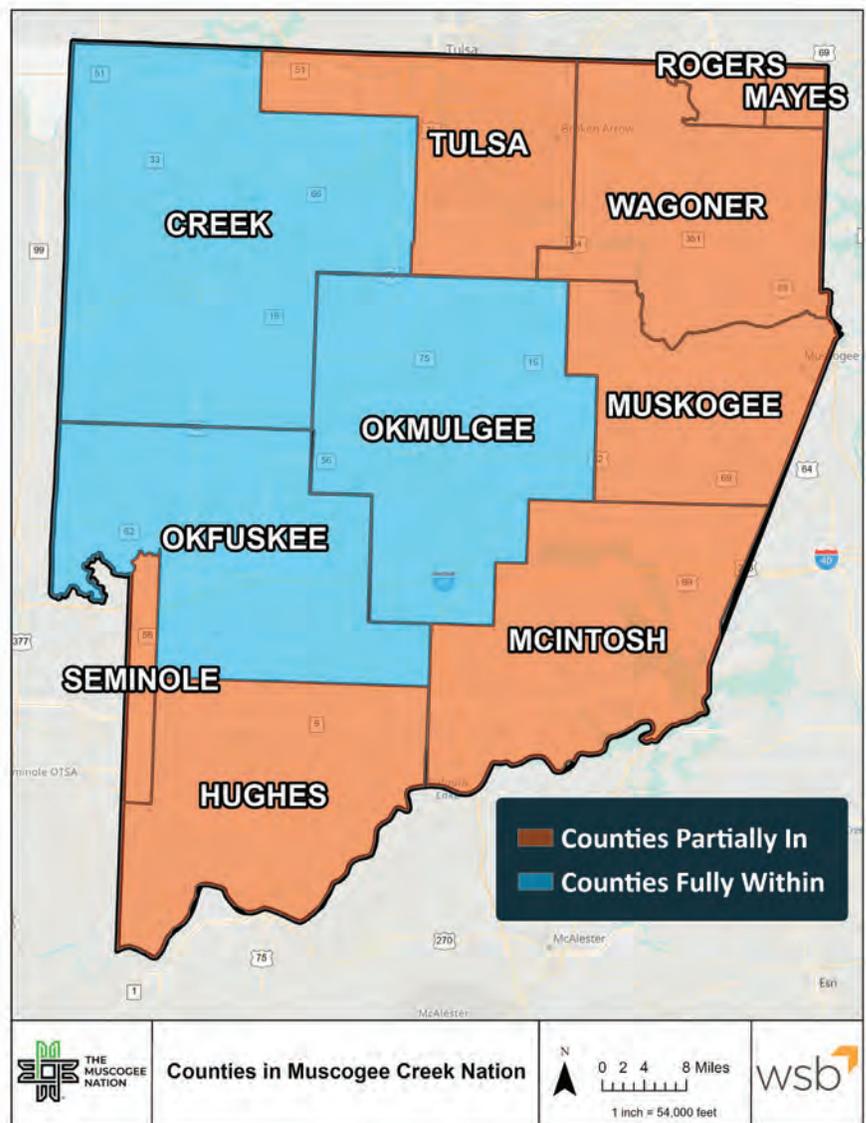
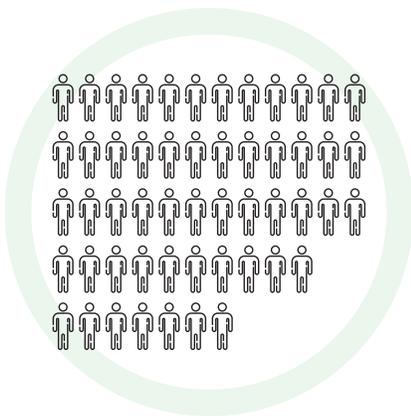


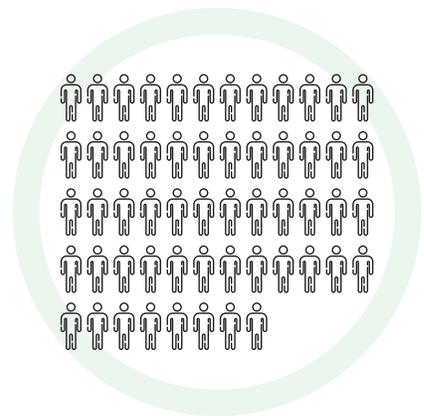
Figure 1 - Muscogee Creek Nation's Jurisdiction Boundaries



2.2 Demographics



2019
87,344 CITIZENS



2024
100,000 CITIZENS

The Muscogee Creek Nation has experienced notable population growth over recent years contributing to increasing demands on infrastructure and road safety systems. In 2019, the Nation reported a total population of 87,344 citizens, which grew to over 100,000 by 2024, an increase of about 14.5% over this period. This upward trend highlights the need for proactive planning to ensure that transportation infrastructure and road safety measures can effectively accommodate the expanding population while enhancing mobility and accessibility for all residents.

2.2.1 Population Density by County

Table 1 presents the population density by county that is within the Nation's jurisdiction. Population density refers to the number of people per square mile in each county. As shown in the table, Tulsa has the highest population by a large margin, resulting in a higher population density, followed by Wagoner and Muskogee County. **Figure 2** shows the population density (per square mile) by county.

Table 1 - Population Density by County

| COUNTY | POPULATION (2021) * | LAND AREA (SQ MILES) | DENSITY (PER SQ MILE) |
|----------|------------------------|----------------------|-----------------------|
| TULSA | 537,776 | 394.66 | 1362.6 |
| WAGONER | 75,370 | 510.05 | 147.8 |
| MUSKOGEE | 44,231 | 379.97 | 116.4 |
| ROGERS | 4,218 | 48.69 | 86.6 |
| CREEK | 71,809 | 967.81 | 74.2 |
| OKMULGEE | 37,028 | 701.89 | 52.8 |
| SEMINOLE | 3,436 | 68.02 | 50.5 |
| MAYES | 1,673 | 35.03 | 47.8 |
| MCINTOSH | 16,024 | 593.44 | 27.0 |
| HUGHES | 10,989 | 545.92 | 20.1 |
| OKFUSKEE | 11,411 | 626.64 | 18.2 |

* Note: The population values refer specifically to the portions of each county that fall within the Muskogee Creek Nation boundaries.

Source: Census Bureau 2017 - 2021 ACS 5-Year Data Profile.

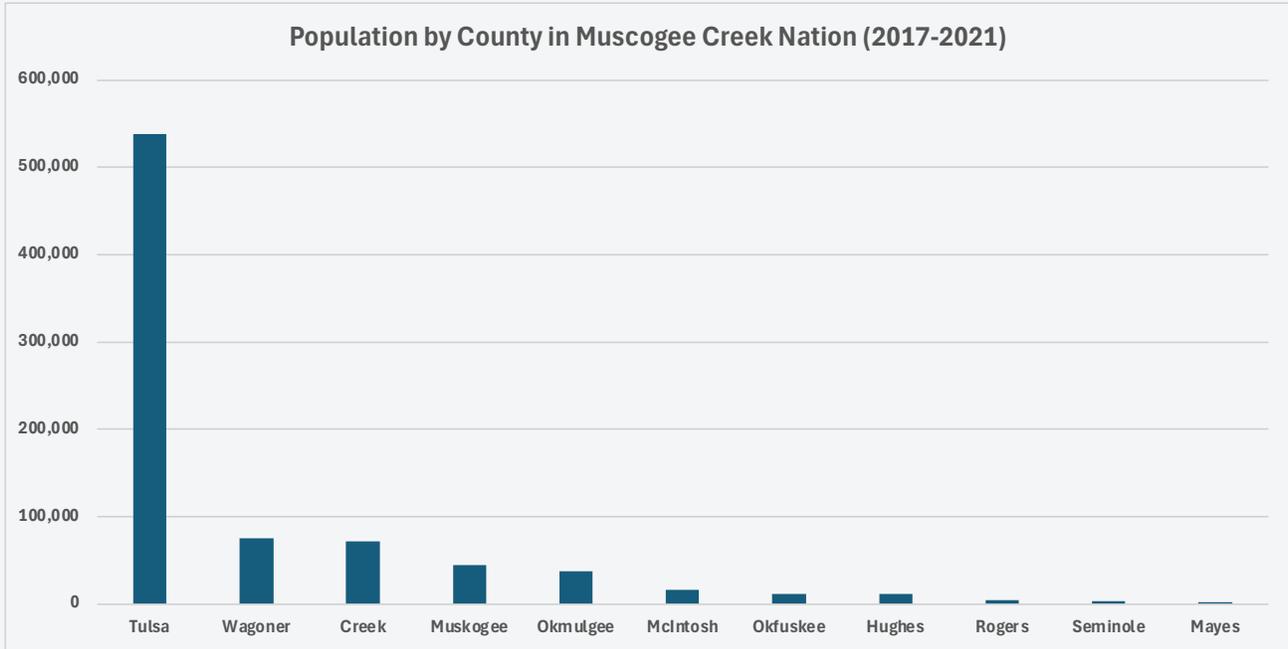


Figure 2 - Population Density by County (2017-2021)

Higher-density counties may face transportation challenges such as increased road demand and higher pedestrian activity, requiring enhanced traffic management and pedestrian safety measures. In contrast, rural counties with lower population densities such as Okfuskee may need different safety improvements, including better road conditions, visibility enhancements, and emergency response planning.

2.2.2 Additional Demographic Data: Summary of Population and Income Distribution

The Muscogee Creek Nation has a notably higher percentage of American Indian and Alaskan Native residents (7.43%) compared to the national average (0.6%), while Hispanic, Asian, and African American populations are slightly lower than national figures. This racial makeup is broadly consistent with Oklahoma's overall demographics.

In terms of household income, the Nation shows a strong presence in middle-income brackets—particularly in the \$50,000 to \$74,999 range—closely aligning with statewide patterns. However, it has fewer households in the highest income categories compared to the U.S. overall, which may influence transportation affordability and access. Detailed data tables and figures are included in **Appendix A - Supplementary Data on the MCN Overview, Section A.2**.



2.3 Transportation Network and Infrastructure

To analyze the roadway segments within the Muscogee Creek Nation, a roadway network shapefile was received from the Nation. However, this shapefile lacked the necessary attributes for further analysis. Therefore, the ODOT database was investigated, which revealed two relevant Geographic Information System (GIS) datasets. The first was called Main Roadways and covered all functional classes except local roadways. The second was called Local Roadways and was specific to local roadways. By combining these two datasets, the total roadway network within the Muscogee Creek Nation comprises of 11,240 miles of roads.

Main Roadways are categorized into six types based on functional classification, totaling 3,435 miles. **Figure 3** illustrates these roadway types with their respective percentages, while **Figure 4** presents a map of the functional classifications within the Main Roadway network.

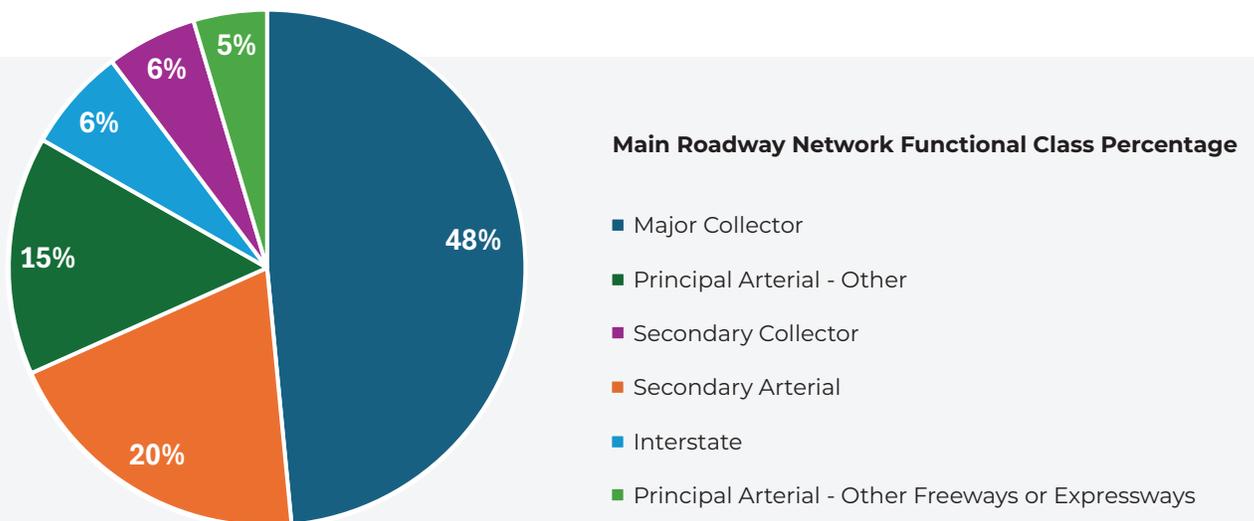


Figure 3 - Main Roadway Network Functional Classification Percentages



Local Roadway, unlike Main Roadway, are not classified under specific road types in the ODOT GIS database. Instead, an alternative database is used to identify and assess local roads, which account for 7,805 miles of the total Muscogee Creek Nation roadway network.

To understand traffic patterns, roadways within Muscogee Creek Nation were classified based on Annual Average Daily Traffic (AADT). This metric provides an estimate of the average number of vehicles traveling on a roadway each day. The AADT was broken into the following three categories using the Jenks Natural Breaks algorithm (Reference: Jenks, G. F. (1967). "The Data Model Concept in Statistical Mapping," International Yearbook of Cartography, 7, 186–190):

- **Low Traffic Volume:** AADT below 12,700 vehicles per day - Majority of the roads (95.14%)
- **Medium Traffic Volume:** AADT between 12,700 and 48,400 vehicles per day (4.34% of total roadways)
- **High Traffic Volume:** AADT above 48,400 vehicles per day (0.52% of total roadways)

Note: A map showing the geographic distribution of roadways by AADT categories is provided in **Appendix A - Supplementary Data on the MCN Overview, Section A.3.1.**

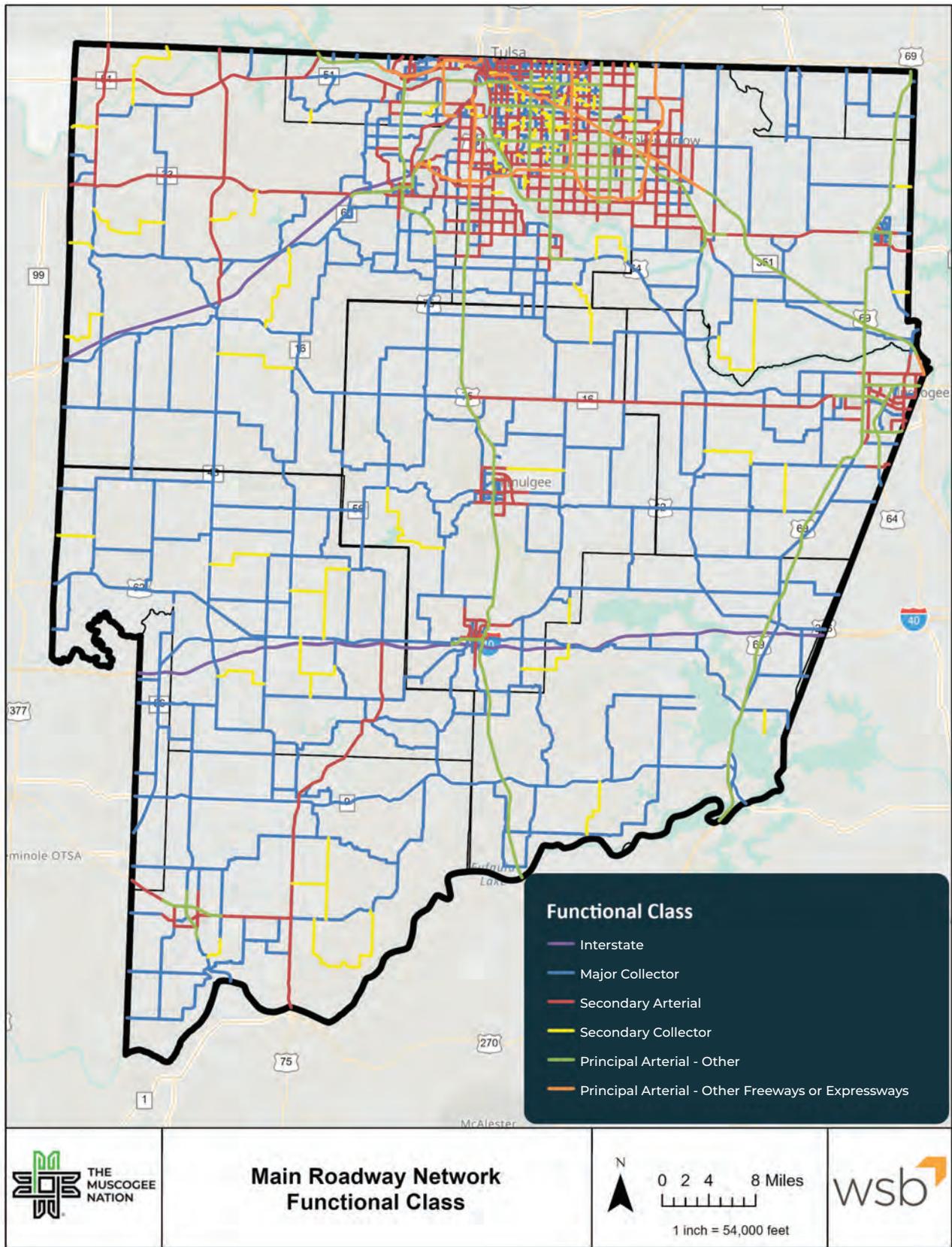


Figure 4 - Main Roadway Network Functional Classification



2.3.1 Shoulder Width

Shoulder width is a key component of roadway safety and operational efficiency. Adequate shoulders provide space for emergency stops, enhance accessibility for non-motorized users, and contribute to smoother traffic flow. In the Muscogee Creek Nation, shoulder width conditions vary across roadway types, with a notable percentage of rural and local roads falling below adequacy standards. Details on the specific thresholds and mileage distribution by road type are provided in **Appendix A - Supplementary Data on the MCN Overview, Section A.3.2.**

2.3.2 Transit Facilities

The Tribal Transit Program operates public transit services within the Muscogee Creek Nation Reservation. These services are available to all residents, not limited to tribal citizens. Muscogee Nation Transit partners with several regional transit providers to extend service coverage to areas where the Muscogee transit system is unavailable.



FIXED TROLLEY ROUTE

The fixed trolley route operates similarly to a fixed-route system, serving Okmulgee County with 16 designated trolley stops. This service runs weekdays Monday to Thursday from 8:00 AM to 5:00 PM, with six trips per day--three in the morning and three in the afternoon.



KI BOIS AREA TRANSIT SYSTEM (KATS)

In partnership with the Muscogee Creek Nation, KATS provides demand-response services both within the reservation and in nearby counties. KATS serves counties including Okmulgee, McIntosh, Okfuskee, Wagoner, and Seminole, with dispatch centers located in major towns across these regions.



CIMARRON PUBLIC TRANSIT (CPT)

CPT offers curb-to-curb demand-response services in Creek County, specifically covering Bristow, Drumright, Kellyville, Mannford, Oilton, and Sapulpa.



MUSKOGEE COUNTY TRANSIT SERVICE (MCT)

MCT provides demand-response services within Muskogee County, which includes a portion of the Muscogee Creek Nation Reservation.



METROPOLITAN TULSA TRANSIT AUTHORITY (MTTA)

MTTA operates within Tulsa County, offering both fixed routes and demand-response services. Tulsa's Metrolink is a fixed-route bus system, while surrounding areas are served by the Micro Link demand-response system. While Tulsa is outside the Muscogee Creek Nation Reservation, it is a key urban area for residents requiring access to broader transportation networks.

Figure 5 shows the service area of different transit providers operating within and around Muscogee Creek Nation.

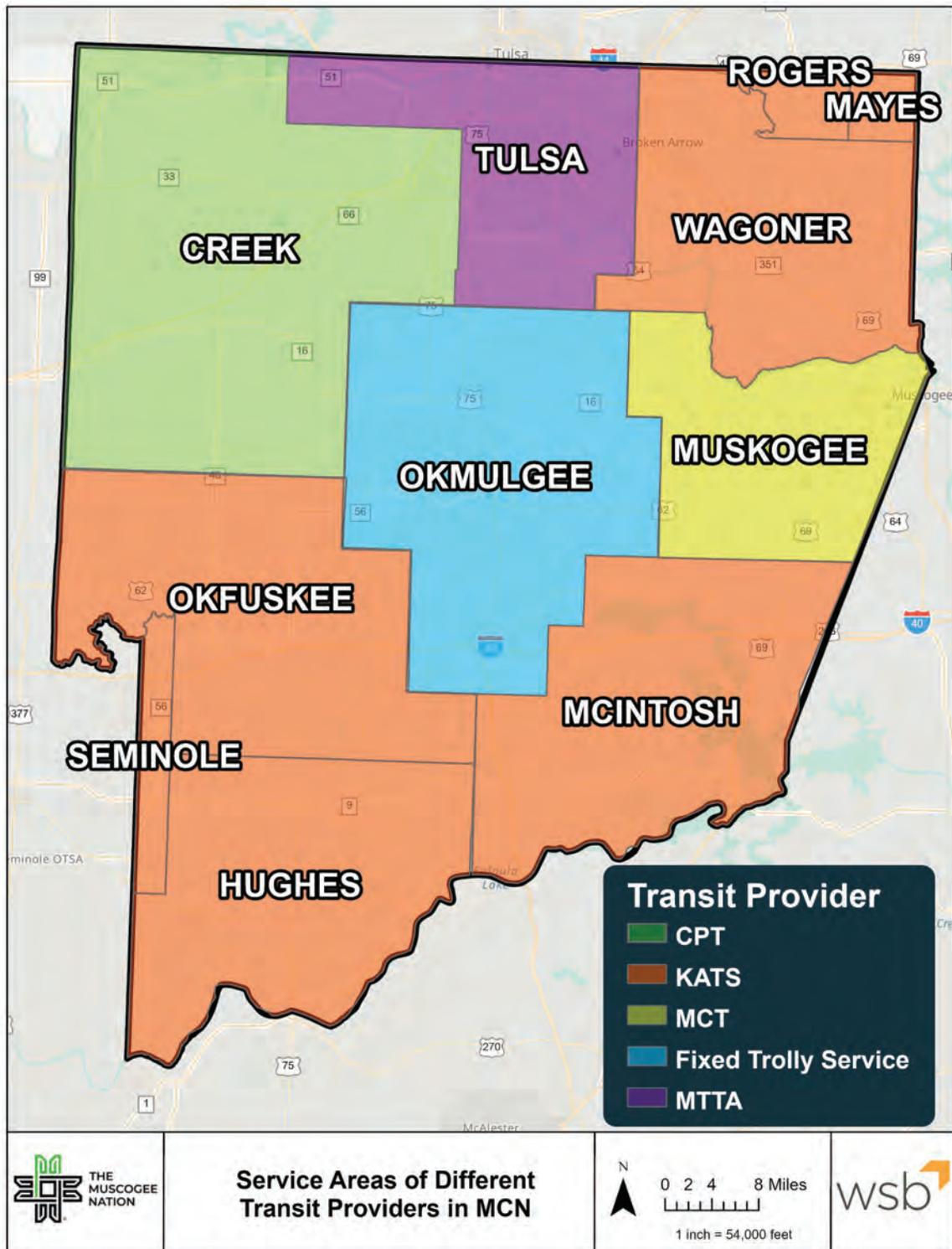


Figure 5 - Service Areas of Different Transit Providers in Muscogee Creek Nation



2.4 Transportation Authority and Governance Structure

2.4.1 Authority

The Muscogee Creek Nation operates under a structured governance framework that empowers its government to manage, plan, and oversee key aspects of transportation infrastructure within its jurisdiction. The Muscogee Creek Nation Tribal Council and the Principal Chief hold executive and legislative authority over the Nation’s policies, including those related to transportation and infrastructure development.

The MCN DOT is the primary agency responsible for managing and maintaining roads, bridges, and other transportation systems across the Nation. This department works to improve the safety, accessibility, and quality of the transportation network for tribal citizens, visitors, and the surrounding communities.

In addition to its internal management, the Muscogee Creek Nation collaborates closely with various federal and state agencies to enhance transportation infrastructure.



FEDERAL PARTNERSHIPS

Through programs like the Federal Highway Administration’s Tribal Transportation Program (TTP), the Nation receives funding and technical assistance to maintain and improve road networks. This includes access to grants, such as the SS4A grant, and support from the Bureau of Indian Affairs (BIA) for road maintenance on tribal lands.



STATE-LEVEL COORDINATION

The Muscogee Creek Nation coordinates with the ODOT authorities on shared transportation corridors and cross-jurisdictional projects. This collaboration ensures that transportation initiatives align with broader state and regional infrastructure planning.

2.4.2 Project Governance

For the development of a SS4A Safety Action Plan and as part of the planning structure, the Muscogee Creek Nation DOT created a Project Oversight Team. This team consisted of David Ford, the Muscogee Creek Nation project manager and Director, Shelby Deere, Planner, and Tami Humphrey, Administrator. The Oversight Team provided vision, guidance, and decisions on behalf of the Nation. Additionally, a Project Team was formed that included staff members from the consulting firm WSB. The Project Team worked in a collaborative manner and environment with

clear communication and direction. Through the collaborative process the Oversight and Project Teams were able to keep everyone informed of the project milestones, gather feedback, collaborate, and provide an avenue to maintain transparency in the SS4A planning process.

As the project moved forward, they convened bi-monthly and monthly status meetings during the development of the Safety Action Plan. It is anticipated that the Muscogee Creek Nation Oversight Team will oversee the implementation and monitoring of the Muscogee Creek Nation SS4A Safety Action Plan going forward.

PROJECT OVERSIGHT TEAM



DAVID FORD
MUSCOGEE CREEK NATION
PROJECT MANAGER AND DIRECTOR



SHELBY DEERE
PLANNER



TAMI HUMPHREY
ADMINISTRATOR

PROJECT TEAM



STAFF MEMBERS FROM
THE CONSULTING FIRM
WSB

Safety Analysis

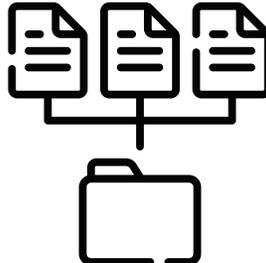


CHAPTER 3 HIGHLIGHTS

- Data collected from ODOT Collision Data Request Portal and Oklahoma Highway Safety Office (2017-2021)
- Total crashes: 55,203
- Fatal crashes: 505 (1%)
- Most common crash type: rear-end, angle-turning, and fixed-object
- Top causes: failure to yield, speeding, poor lighting, and distraction
- Rural areas: higher fatality rate and more rollovers/fixed-object crashes
- Urban areas: more total crashes, especially rear-end and intersection related
- High-risk groups: older adults (65+), male drivers, and unbelted occupants
- Pedestrian/bike crashes: only 2.2% of total, but 21% of all fatalities

Safety Analysis

3.1 Data Collection



The data used in this study consists of a 5-year historical crash dataset from January 1, 2017, to December 31, 2021. This data was requested and collected from the ODOT Collision Data Request Portal on September 30, 2024. For pedestrian and bicycle crashes, the dataset from the Oklahoma Highway Safety Office (OHSO) was used, as it reports a higher number of such incidents—totaling 1,231—and includes additional details such as age, sex, injury type, and the conditions of both the driver and pedestrian. While ODOT categorizes pedestrian crashes as one of many crash types, OHSO reports them separately with more detailed attributes.

After integrating the OHSO dataset and removing duplicate pedestrian and bicycle crashes from the ODOT dataset, the final dataset for analysis includes **53,972** unique vehicle crashes from ODOT and **1,231** pedestrian and bicycle crashes from OHSO, resulting in a total of **55,203 unique crashes**. The full data filtering and integration process is detailed in **Appendix B - Supplementary Data on Safety Analysis, Section B.1**.



3.2 Crash Analysis

3.2.1 Total Crashes by Severity

According to the FHWA's injury classification scale and definitions for Oklahoma, collisions are ranked on a severity scale of 1 to 5, categorized as follows:





Figure 6 shows the percentage of crashes by crash severity in the entire Muscogee Creek Nation. These crashes include 505 fatal crashes, 1,858 incapacitating injury crashes, 8,333 non-incapacitating injury crashes, 13,116 possible injury crashes, and 31,391 property damage-only crashes.

Severity Level Distribution

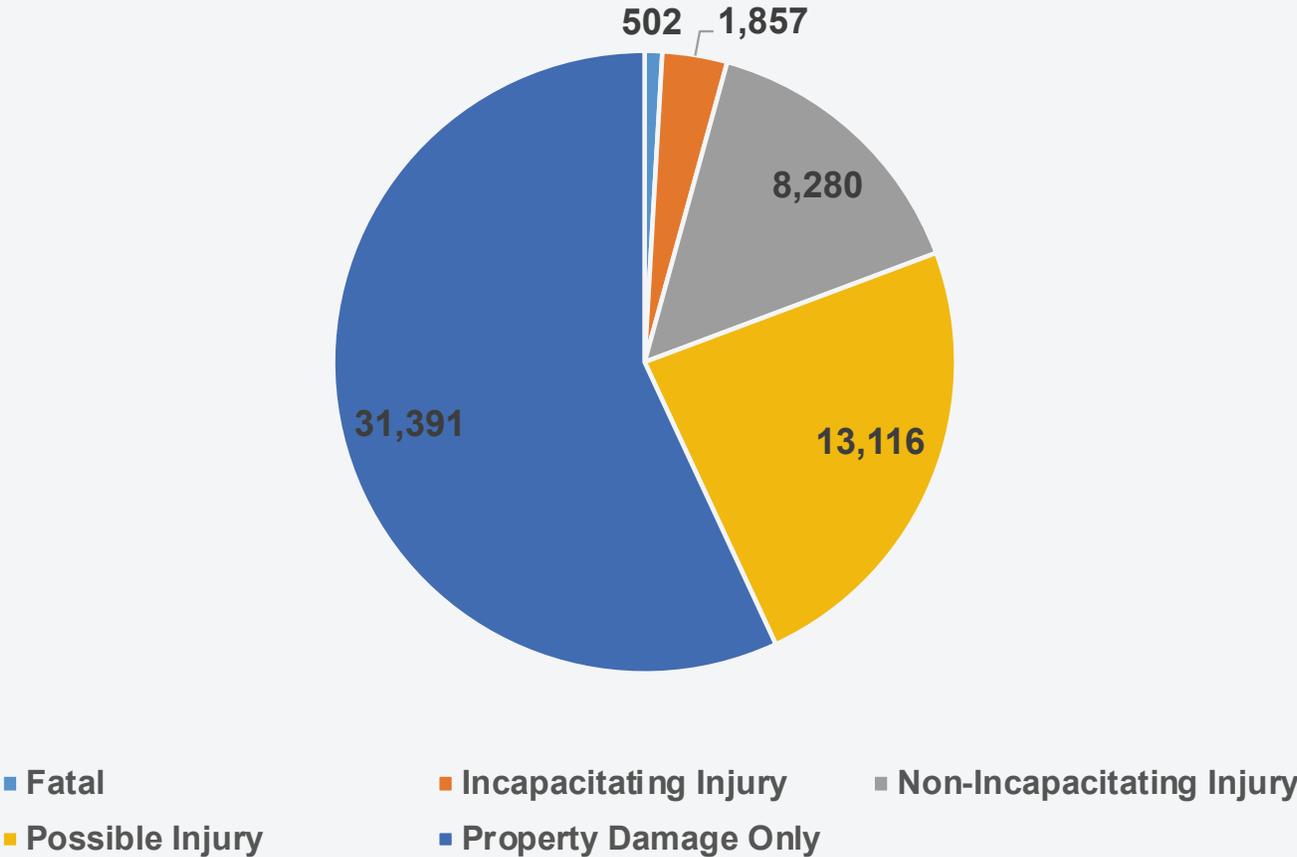
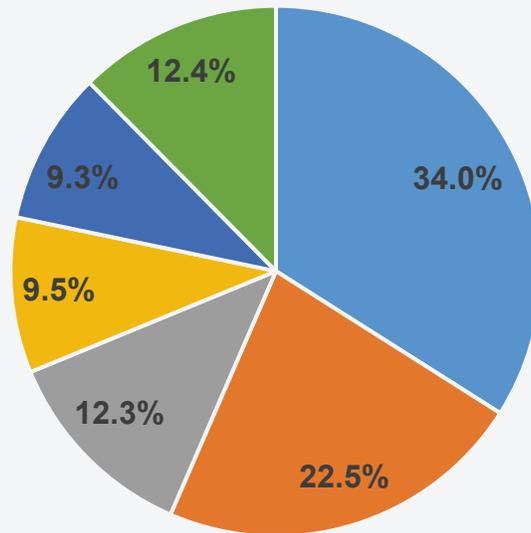


Figure 6 - Total Crashes by Severity (2017-2021) - Entire Muscogee Creek Nation

3.2.2 Crash Types

Crashes within the Muscogee Creek Nation vary by type, with some categories presenting more significant safety concerns than others. **Figure 7** shows the most common types of crashes that happened between the year 2017-2021 in the entire Muscogee Creek Nation. As shown in **Figure 7**, rear-end crashes have the highest percentage, followed by angle-turning and fixed-object.



- Rear-End
- Angle-Turning
- Fixed-Object
- Right-Angle
- Sideswipe - Same Direction
- Other*

Note: Crash types with less than 5% involvement, including rollover, head-on, and animal-related crashes, are categorized as "Other".

Figure 7 - Total Crashes by Crash Type - Entire Muscogee Creek Nation

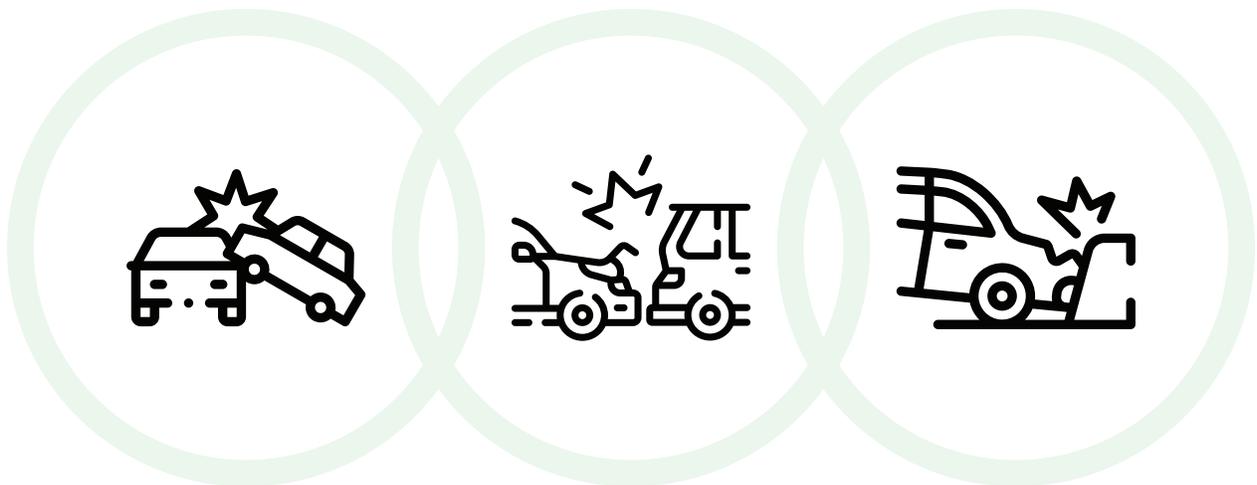




Figure 8 illustrates the three most common types of crashes in each county. In Tulsa County, where a portion of the area within the Muscogee Creek Nation is urban, rear-end crashes account for 37.33%, along with a high occurrence of angle-turning and sideswipe-same direction crashes. In contrast, rural counties such as Rogers,

Seminole, and McIntosh Counties have a higher prevalence of fixed-object crashes, with Rogers County reaching 68.66%. Rollover crashes are more frequent in Hughes, Okfuskee, and Rogers Counties, while animal-related crashes are notably high in Seminole and Hughes Counties. Right-angle and angle-turning crashes are common

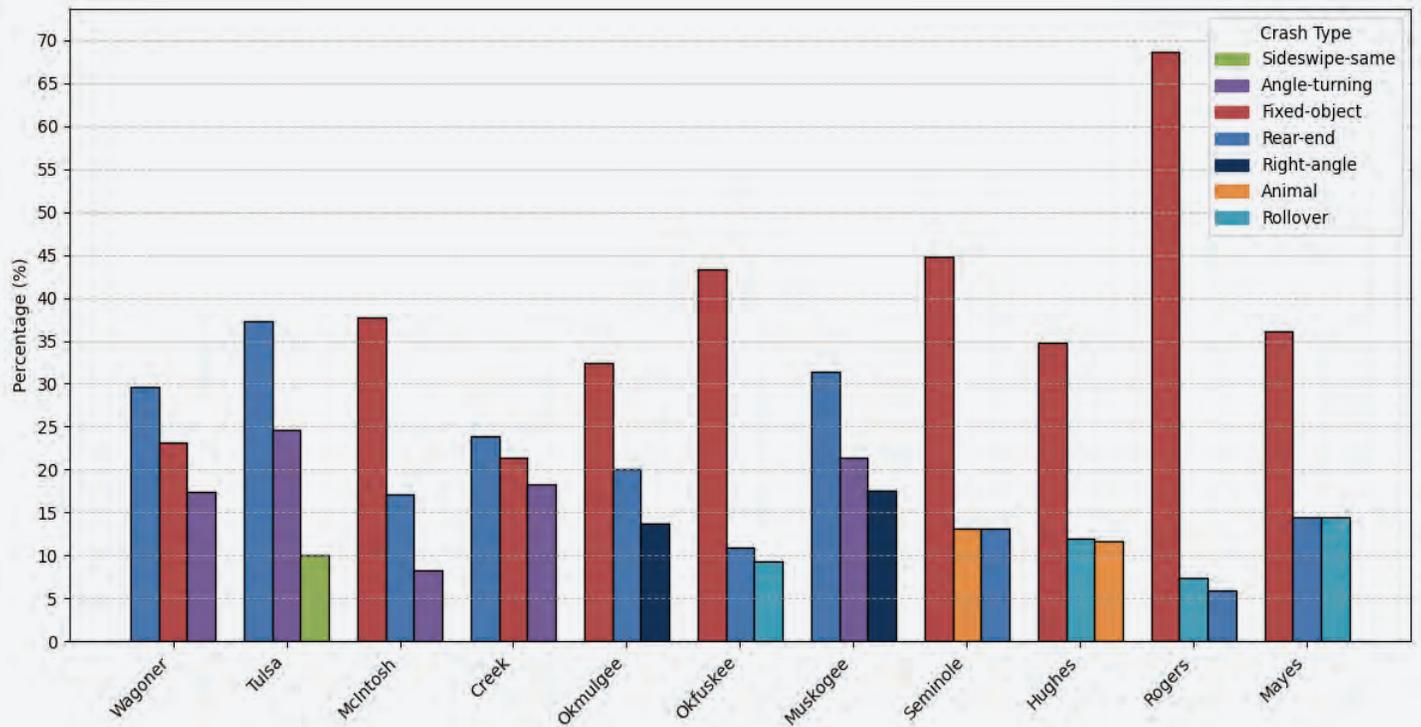


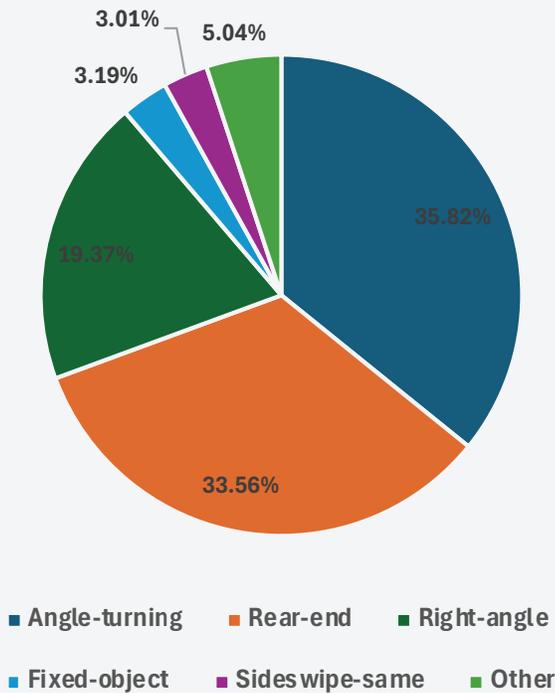
Figure 8 - Crash Types by County

across both urban and rural counties.

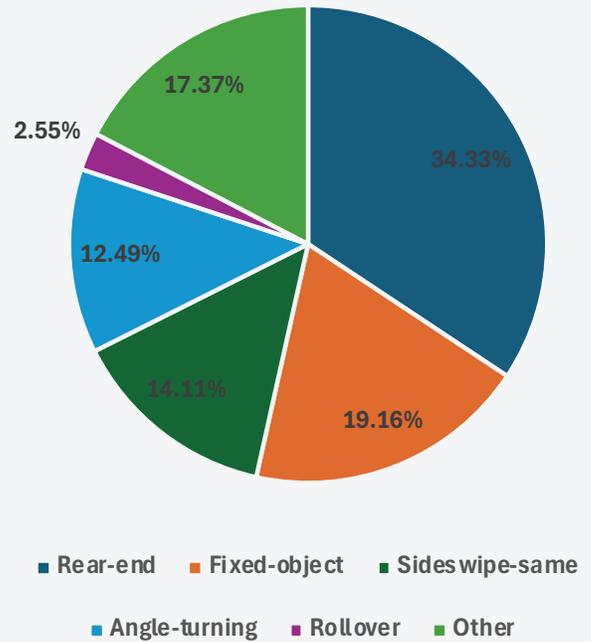
Figure 9 illustrates the differences in crash types between intersection-related and roadway-related crashes, which derives from distinct driving conditions and traffic patterns. Intersection crashes often involve conflicts between crossing or turning vehicles, while roadway crashes are influenced by speed, lane changes, and road departures. As shown in this figure, intersection-

related crashes are predominantly angle-turning (35.82%) and rear-end (33.56%) collisions, with right-angle crashes (19.37%) also being prevalent. Roadway-related crashes most commonly involve rear-end collisions (34.33%), fixed-object crashes (19.16%) and sideswipe-same direction crashes (14.11%). Although angle-turning crashes occur in both categories, they are significantly more frequent at intersections.

Intersection Related Crashes Main Types

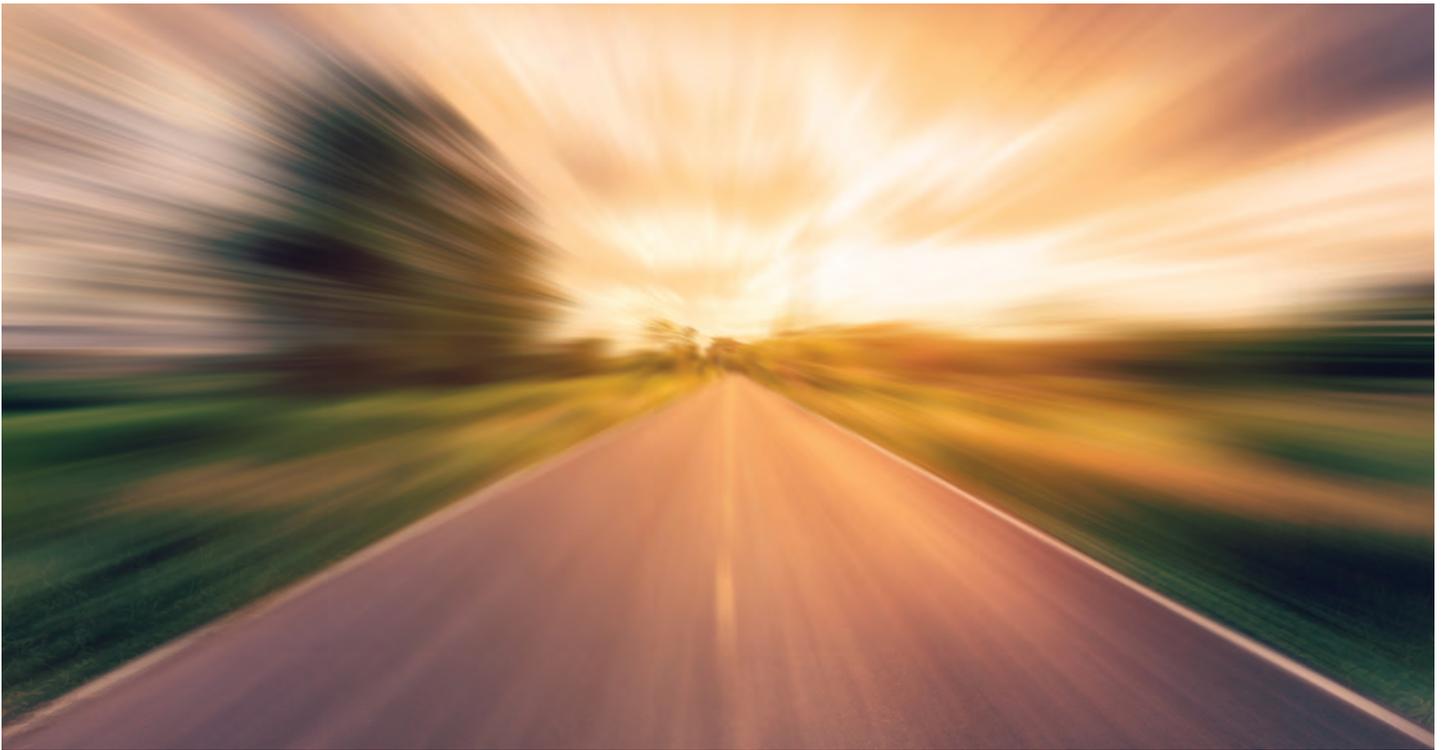


Roadway Related Crashes Main Types



Note: Crash types with less than 5% involvement, including Pedestrian, Bicyclist, Head-On, Other Angles, Sideswipe, Opposite Direction, and Animal related, are categorized as "Other."

Figure 9 - Main Crash Types in Roadway Related and Intersection Related Crashes



3.2.3 Contributing Factors (Crash Reasons)

Understanding the factors that contribute to crashes is crucial for identifying key safety concerns and implementing effective countermeasures. A number of reasons can lead to crashes, but some stand out as more significant than others. The analysis focuses on these major contributing factors to highlight critical behavioral, geometry, and environmental issues affecting roadway safety.

Of all the categories representing the reasons behind crashes, as provided in the data, only the contributing percentages higher than 5% were identified as the main contributing factors. **Table 2** presents the primary contributing factors in crashes for the entire Muscogee Creek Nation. It shows the number and percentage of crashes associated with each of these reasons, ordered from highest to lowest based on the total contributing percentage. This table includes the following:

- **Contributing Crashes (Total):** Represents the total number of crashes where this reason was one of the contributing factors.
- **Sole Cause Crashes:** Represents the number and percentage of crashes where this reason was the only cause.

As shown in **Table 2**, Failed to Yield and Speed are the top reasons, with Failed to Yield contributing to 18.39% of crashes and being the sole cause in 15.38%. Speed accounted for 16.95% of crashes, with 10.28% as the sole cause. Poor Lighting (12.82%) and Distraction (10.13%) are also significant, though they are more often contributing factors than the sole cause. Other reasons like Following Too Closely and Improper Turn are notable contributors but less frequently the only cause.

Table 2 - Primary Contributing Factors in Crashes (≥5% Contribution) – Entire Muscogee Creek Nation

| CRASH REASONS | CONTRIBUTING CRASHES (TOTAL) | | SOLE CAUSE CRASHES | |
|-------------------------------|------------------------------|------------|--------------------|------------|
| | NUMBER | PERCENTAGE | NUMBER | PERCENTAGE |
| FAILED TO YIELD | 11,024 | 20.04% | 8,819 | 16.03% |
| SPEED | 9,776 | 17.77% | 5,625 | 10.23% |
| POOR LIGHTING | 7,047 | 12.81% | 875 | 1.59% |
| DISTRACTION | 5,985 | 10.88% | 4,559 | 8.29% |
| POOR WEATHER | 5,981 | 10.87% | 225 | 0.41% |
| FOLLOWED TOO CLOSELY | 5,767 | 10.48% | 4,516 | 8.21% |
| IMPROPER TURN | 4,002 | 7.28% | 3,154 | 5.73% |
| CHANGED LANES UNSAFELY | 3,994 | 7.26% | 3,227 | 5.87% |
| FAILED TO STOP | 3,539 | 6.43% | 2,771 | 5.04% |
| ALCOHOL/DRUG | 2,998 | 5.45% | 1,185 | 2.15% |

In addition to the major contributing factors that cause crashes, the use of protective devices (such as seat belts, helmets or child seats) impacts the severity of the crash. Crash records include an attribute indicating whether the person involved was using a protective device. According to crash data from the ODOT database (2017-2021), approximately 51% of fatalities were linked to instances where the protective device was not used, highlighting the critical need for promoting usage of safety devices.



3.2.4 Crashes by Demographic Patterns, Area Type, and Region

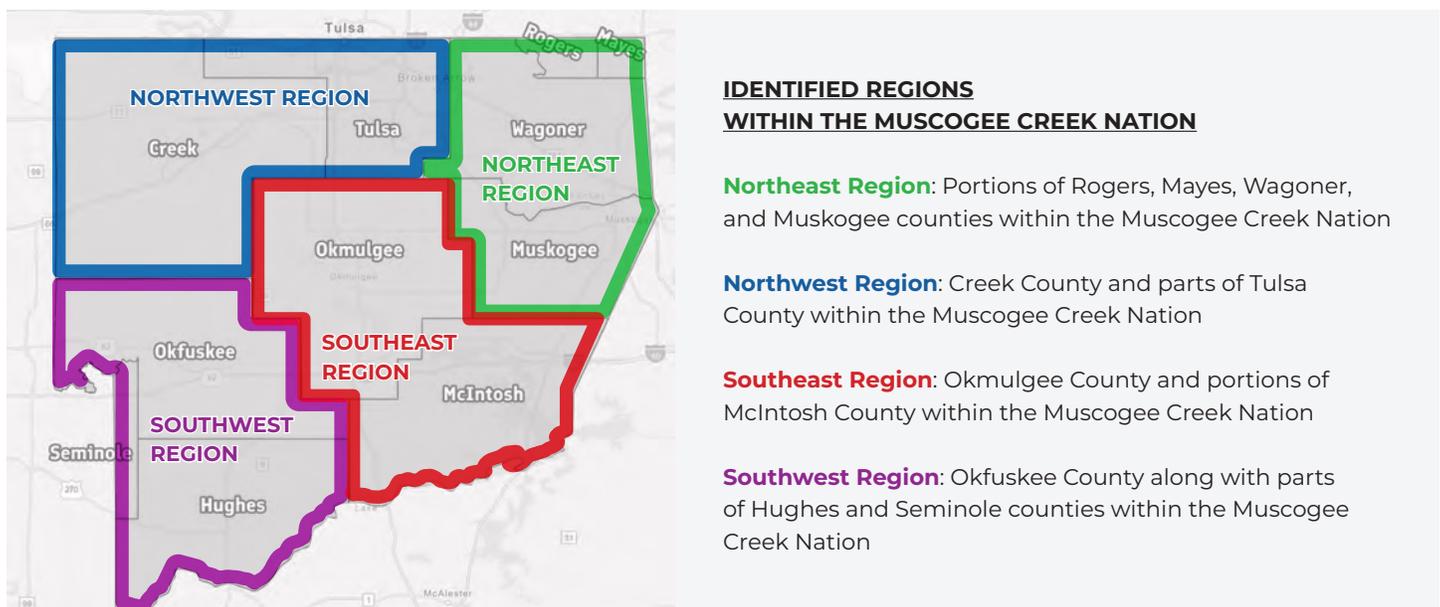
Between 2017 and 2021, several patterns emerged regarding crashes in the Muscogee Creek Nation. **Older drivers (65+)** were involved in **9.83% of total crashes and 10.56% of fatal crashes**, indicating a higher fatality rate relative to their overall involvement. **Teenage drivers** accounted for **11.44% of total crashes** but a smaller percentage (**6.37%**) of fatal crashes, suggesting these incidents are generally less severe. Gender analysis showed that male drivers were involved in a disproportionate share of both total and fatal crashes.

Crashes also varied significantly between rural and urban areas. Of the total crashes occurring in urban and rural areas, **rural areas** exhibited a **higher fatality rate (1.32%)** compared to **urban areas (0.6%)**, while urban areas experienced more injuries (43.59%) and a higher number of crashes overall. Property damage crashes were slightly more in rural areas (58.36% in rural vs 55.81% in urban areas).

Further analysis of crashes by region, as described in **Appendix B - Supplementary Data on Safety Analysis, Section B.2.3**, revealed regional differences in crash severity level and crash types as summarized below.

Crash severity by region:

- The Northwest Region recorded the highest number of crashes across all severity levels.
- The Southwest Region had the lowest total number of crashes but a higher proportion of fatal and incapacitating injury crashes.
- The Southeast Region displayed a similar trend to the Southwest, with a greater share of severe crashes relative to its total.
- The Northeast and Northwest Regions had lower percentages of severe crashes but higher rates of non-incapacitating injuries.



Crash types by region:

- **Northern Regions** (Northwest and Northeast) saw more **rear-end and angle-turning crashes**, reflecting higher traffic volumes and intersection density.
- **Southern Regions** (Southwest and Southeast) experienced more **fixed-object crashes and rollovers**, consistent with **rural, higher-speed roadway conditions**

For detailed data, including specific tables, figures, and further analysis, refer to **Appendix B - Supplementary Data on Safety Analysis, Section B.2**.



3.2.5 Crashes by County

Table 3 presents the percentage of crashes by severity level for each county within the Muscogee Creek Nation, along with the total number of crashes in each county, ordered from the county with the highest number of crashes to the lowest. For counties that are only partially within the Muscogee Creek Nation, only crashes occurring within Muscogee Creek Nation boundaries have been considered. According to this table:

- **Tulsa** County has the **highest number of crashes** (40,675), with fatal crashes at 1% and property damage-only crashes at 56%, indicating a lower distribution of crash severity and a higher proportion of minor incidents.
- **Hughes** County has the **highest fatal crash** percentage (5%), despite a much lower total number of crashes (293). Similarly, **Okfuskee and Seminole** Counties also have relatively **high fatal crash** rates (4%), despite their smaller crash volumes.
- **Mayes** (23%) and **Rogers** (22%) Counties have the **highest percentages of non-incapacitating injuries**, suggesting a higher occurrence of moderate injury crashes. In contrast, McIntosh County has the highest proportion of **property damage-only** crashes (71%), indicating fewer injury-related incidents.

The data highlights regional differences in crash severity, with rural counties experiencing higher fatal crash rates, while urban counties like Tulsa have a greater share of non-fatal injuries and property damage-only crashes due to higher traffic volumes and lower-speed environments.

A detailed breakdown of normalized crash data by population and area, as well as contributing crash factors across counties (e.g., failed to yield, speeding, poor lighting), is provided in **Appendix B - Supplementary Data on Safety Analysis, Section B.3**.

Table 3 - Crash Distribution by County and Severity Level

| COUNTY | SEVERITY LEVEL | | | | | TOTAL CRASHES |
|----------|----------------|-----------------------|-------------------------------|-----------------|-----------------|---------------|
| | FATAL | INCAPACITATING INJURY | NON- INCAPACITATING INJURY | POSSIBLE INJURY | PROPERTY DAMAGE | |
| TULSA | 1% | 3% | 16% | 25% | 56% | 40,675 |
| CREEK | 2% | 3% | 14% | 24% | 57% | 3,742 |
| WAGONER | 1% | 4% | 17% | 17% | 60% | 3,094 |
| OKMULGEE | 2% | 6% | 12% | 21% | 59% | 1,758 |
| MCINTOSH | 2% | 3% | 7% | 16% | 71% | 1,167 |
| OKFUSKEE | 4% | 4% | 8% | 19% | 66% | 787 |
| MUSKOGEE | 1% | 4% | 14% | 20% | 62% | 3,373 |
| HUGHES | 5% | 5% | 12% | 16% | 62% | 293 |
| SEMINOLE | 4% | 3% | 17% | 16% | 61% | 107 |
| MAYES | 4% | 5% | 23% | 18% | 51% | 83 |
| ROGERS | 1% | 4% | 22% | 15% | 57% | 67 |

3.2.6 Pedestrian and Bicycle Crashes

According to data from the OHSO for the years 2017 to 2021, there were **834 pedestrian-involved crashes**, representing **1.51%** of all crashes in the region. Additionally, **397 bicycle-involved crashes** accounted for **0.72%** of total crashes.

Pedestrian and bicycle crashes, while comprising only **2.23%** of all crashes, contribute disproportionately to severe outcomes. Of the **505 fatal crashes** recorded in the study area, **107 (over 21%)** involved pedestrians or bicyclists, underscoring their heightened vulnerability. Serious injuries were also significant, with **233 crashes** classified as incapacitating. Non-incapacitating and possible injuries made up the majority of incidents (723 crashes), while only **168 crashes** resulted in property damage alone. **Figure 10** shows pedestrian and bike crashes by severity level.

A breakdown of crash severity levels by region and county shows that the Northwest Region, home to Tulsa County, had the highest number of both pedestrian and bicycle crashes, across all severity levels. The Southeast Region, including Muskogee County, followed with the second-highest counts—particularly notable in bicycle-related incidents. Meanwhile, the Northeast and Southwest Regions, which are more rural, recorded substantially fewer incidents.

At the county level, Tulsa County alone accounted for 688 pedestrian crashes and 319 bicycle crashes, reflecting its dense urban environment, high traffic volumes, and elevated pedestrian and cyclist activity. Muskogee County ranked second, while more rural counties such as Rogers, Mayes, and Seminole reported few or no non-motorized incidents. Detailed regional and county-level pedestrian and bicycle crash data are provided in **Appendix B - Supplementary Data on Safety**

Pedestrian and Bike Crashes - Severity Level (2017-2021)

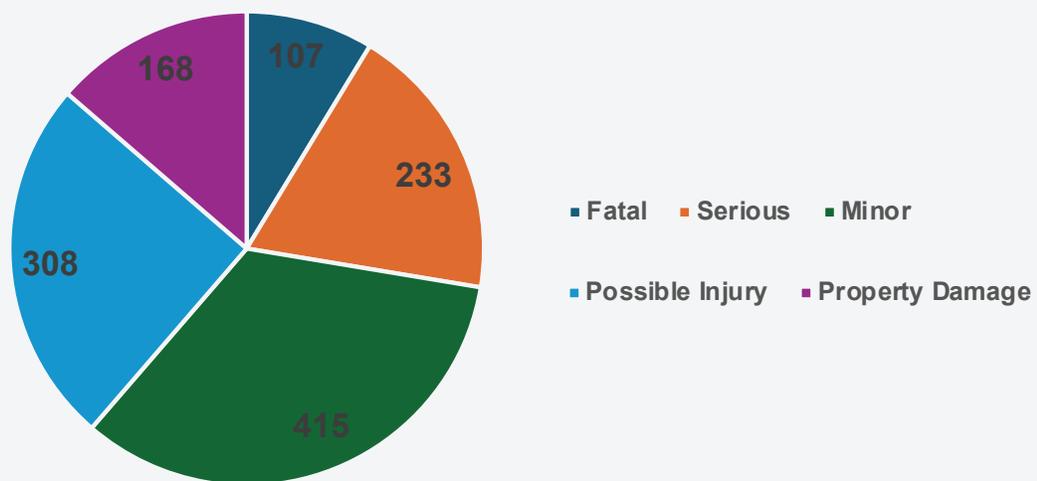


Figure 10 - Pedestrian and Bike Crashes Severity Level Distribution in the Nation (2017-2021)

3.2.7 Crash Heatmaps

To gain a clearer understanding of areas with higher crash concentrations, heatmaps were created to enhance visualization. The heatmap was created based solely on crash frequency, with red areas indicating locations with the highest concentration of fatal and injury crashes, gradually transitioning to green for lower frequencies. Areas without color experienced no fatal or injury crashes. **Figure 11** and **Figure 12** display the heatmaps for total crashes, and for pedestrian and bike crashes, respectively.

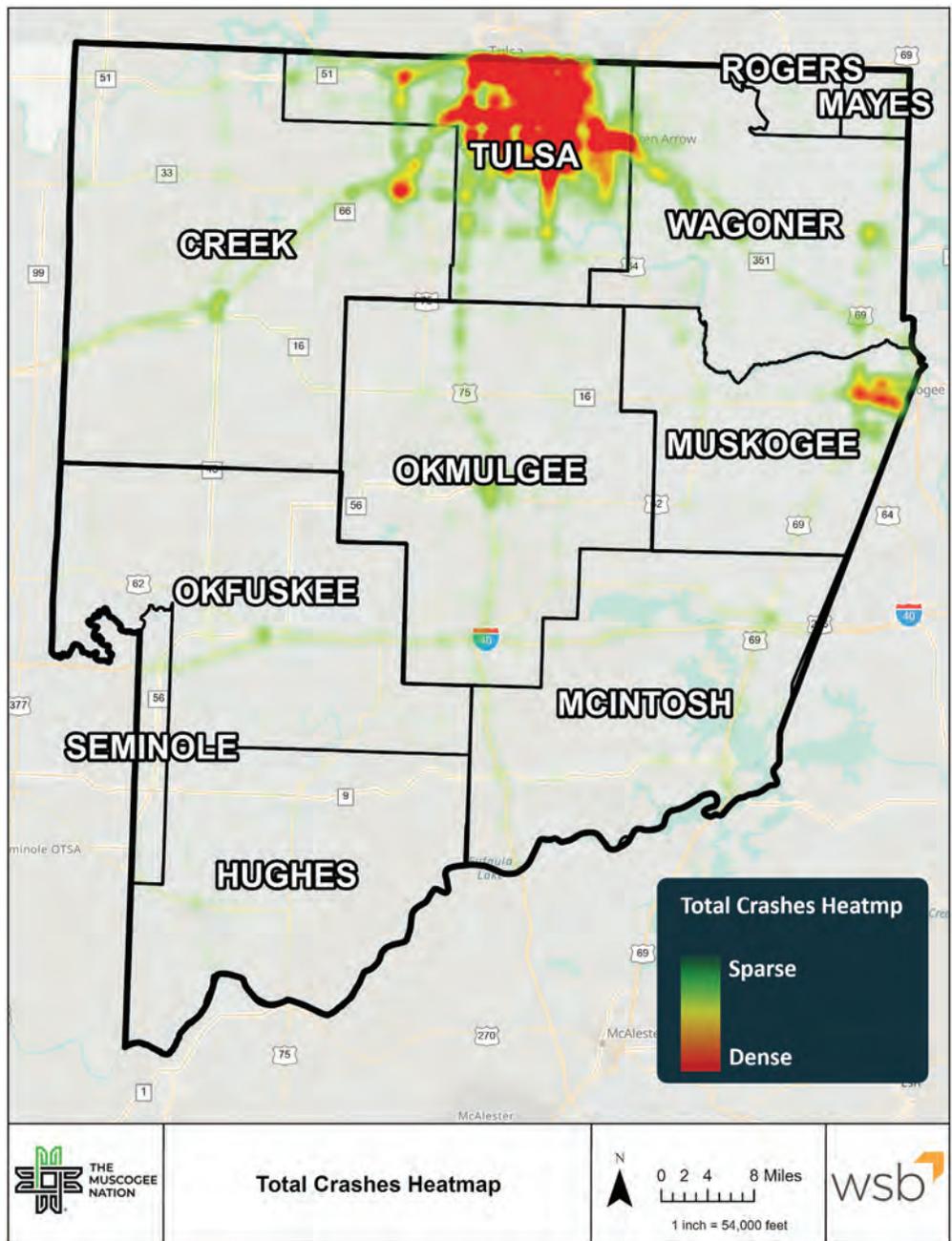


Figure 11 - Total Crashes Heatmap

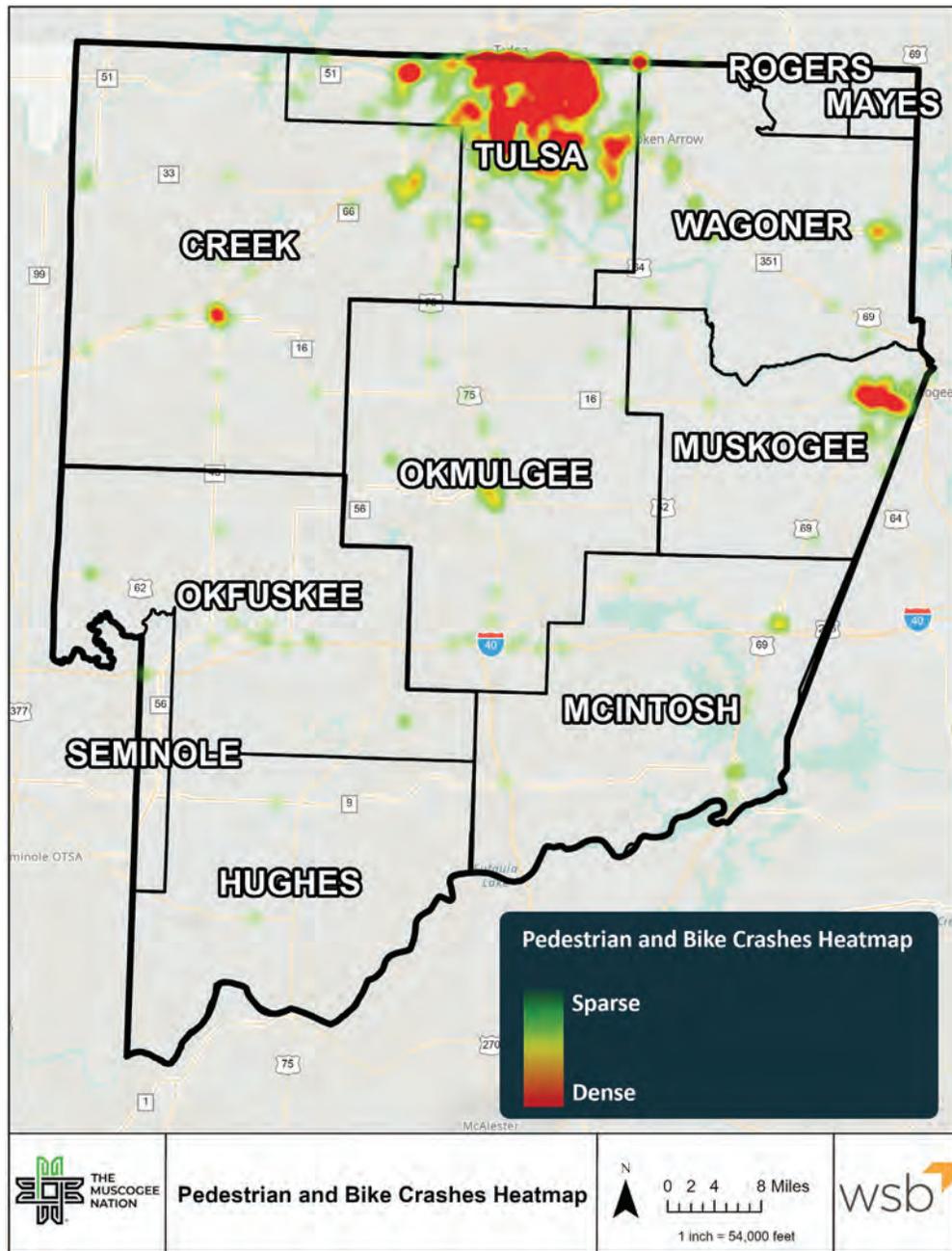


Figure 12 - Pedestrian and Bike Crashes Heatmap

The total crashes heatmap reveals that cities such as Tulsa, Muskogee, and Okmulgee experience higher concentrations of crashes. Additionally, major roadways, particularly interstates and major arterials, exhibit notable crash density.

The heatmap for pedestrian and bike crashes follows a similar pattern to the total crashes heatmap. Higher concentrations of pedestrian and bike crashes are observed in cities like Tulsa, Muskogee, Okmulgee, Bristow, and Wagoner, which aligns with expectations given their higher population densities and traffic activity.



3.2.8 High Injury Network (HIN)

In line with the Vision Zero strategy—aimed at eliminating all traffic fatalities and severe injuries—identifying locations with a high incidence of severe crashes is crucial. The HIN is a method for network screening, focusing on street corridors and intersections that have a history of severe crashes. A detailed, step-by-step explanation of how the HIN network was generated for the nation is provided in the memo of **High Injury Network Development Methodology** in **Appendix C**.

The first step in developing the HIN was to create an initial Injury Network by categorizing

crashes with the top three severity levels—fatal, incapacitating injury, and non-incapacitating injury—into three groups: Low Safety Concerns, Medium Safety Concerns, and High Safety Concerns.

The Medium and High Concern categories collectively account for **100%** of **fatal** crashes, **89.39%** of **incapacitating injuries**, and **61.38%** of **non-incapacitating injuries**, despite covering only 8.35% of the roadway network and 3.51% of intersections. As a result, these two categories were selected as the final **High Injury Network**, as shown in **Figure 13**. **Figure 14** displays the HIN specifically for the vulnerable road user (VRU) pedestrian and bike crashes.

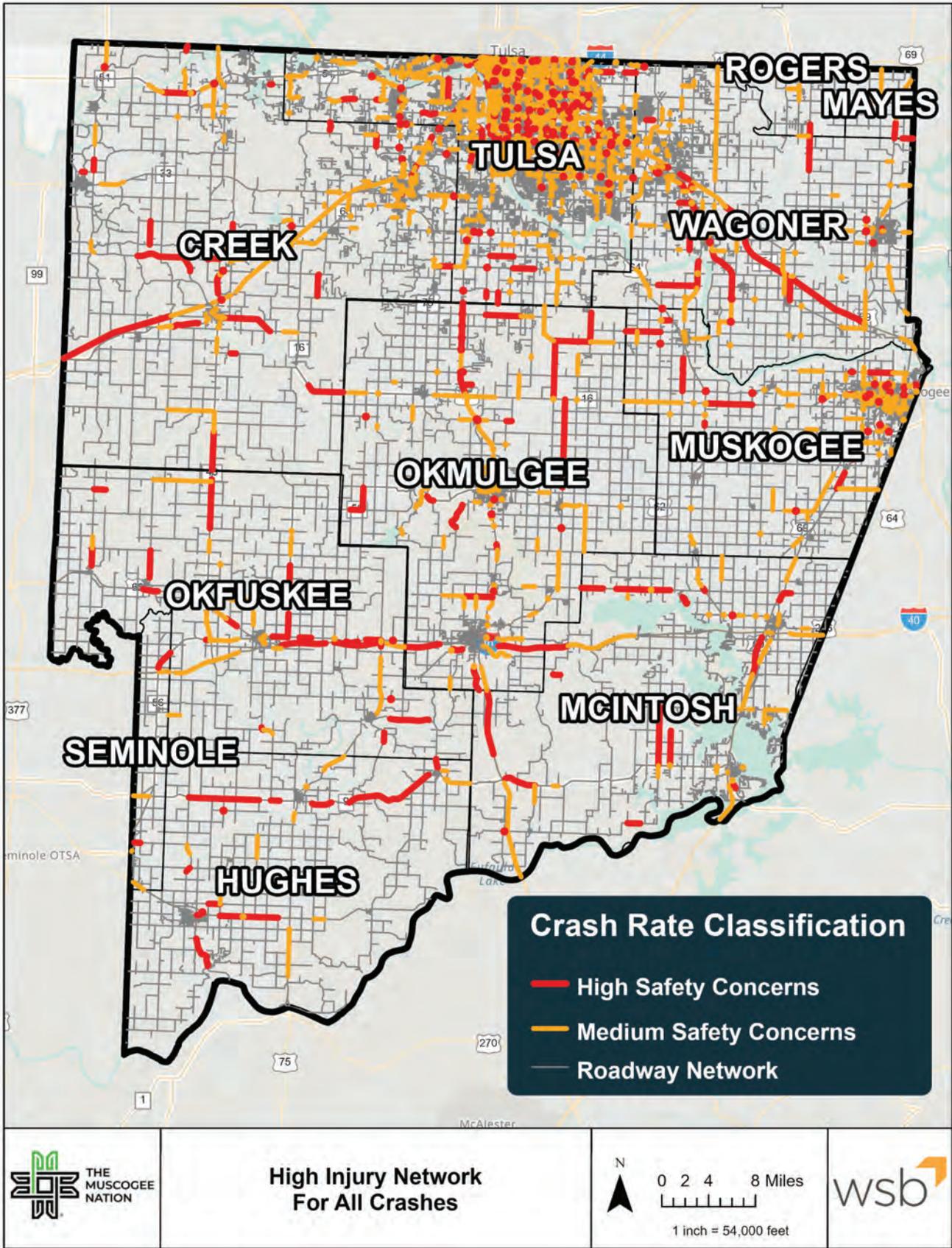


Figure 13 - All Crashes High Injury Network

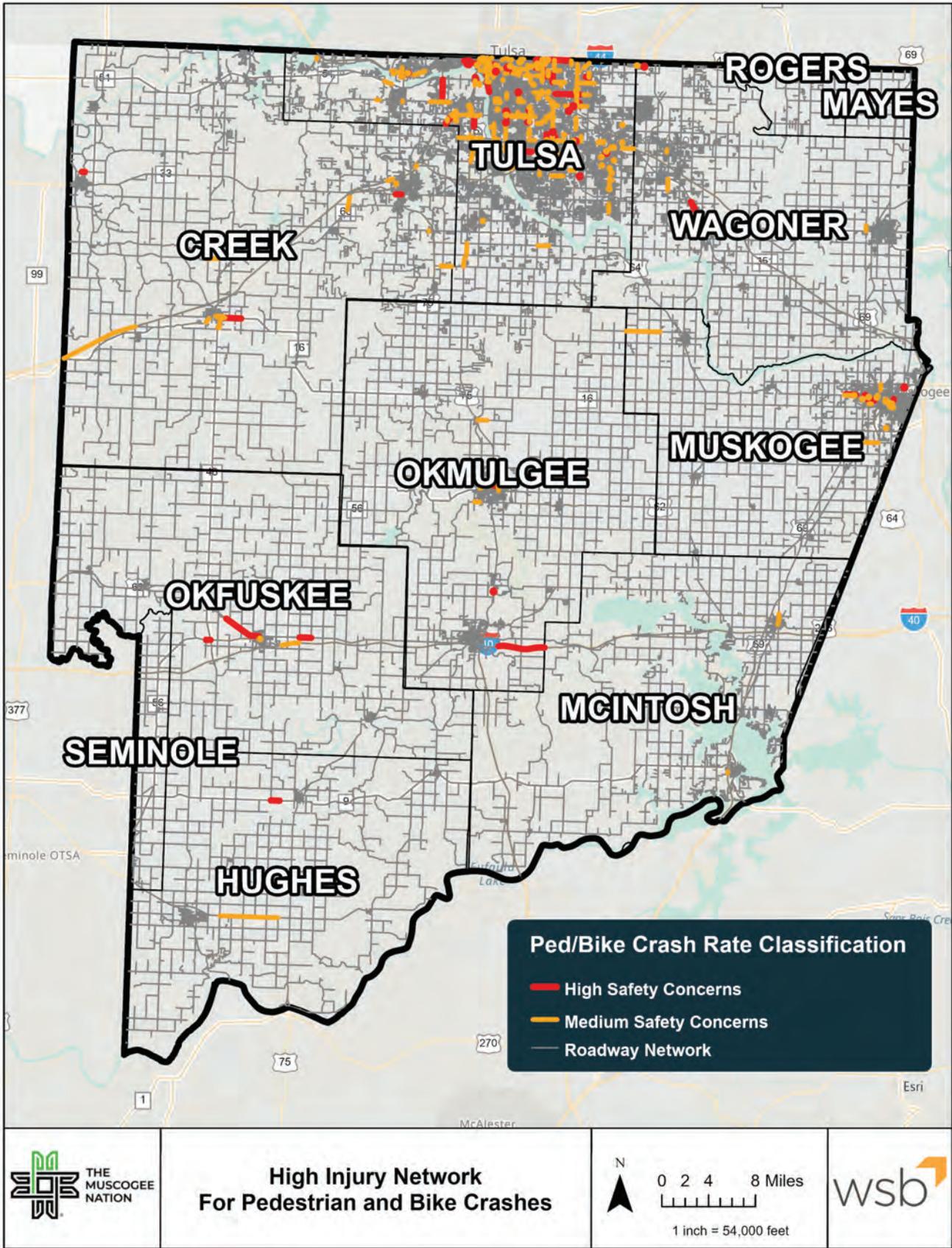


Figure 14 - Pedestrian and Bike Crashes High Injury Network

Public Outreach and Stakeholder Engagement



CHAPTER 4 HIGHLIGHTS

- Outreach engaged Muscogee Creek Nation residents, transportation staff, schools, first responders, and government agencies
- Community input was collected through a project website, comment map, survey, helpline, and 14 meetings across four regions
- The project website (MCNsafety.com) served as a central hub with accessible resources, QR code, and updates
- 30 map comments, 24 survey responses, and 17 helpline inquiries helped inform the plan
- Survey findings showed most people rely on personal vehicles and expressed safety concerns with walking, biking, and infrastructure conditions
- Speeding, distracted driving, poor roads, and lack of traffic law enforcement were top safety concerns
- Strong support was expressed for school zone improvements, public education campaigns, and a community-led safety committee
- Communication preferences included social media, community meetings, and local news



Public Outreach and Stakeholder Engagement

4.1 Approach

Public engagement is a core element of the SS4A program, ensuring the voices of Muscogee Creek Nation residents, community organizations, and public groups are included. Integrating community input with data analysis will ensure consideration of information that may not necessarily, or sufficiently, be recorded in data.

An engagement plan was developed early in the process to outline target audiences and ways to hear from them. These groups were key to ensure issues regarding roadway safety from their perspectives were brought to life as people who drive, walk, bike or roll in Muscogee Creek Nation.

THE FOLLOWING GROUPS WERE INVITED TO PARTICIPATE IN THE PLANNING PROCESS:



Community Members: Including the broader community and Muscogee Creek Nation citizens.



Muscogee Creek Nation Department of Transportation: Lead coordinating all transportation safety information across the Nation.



Local and Regional Government Representatives: Including County Commissioners and Mayors from various regions within Muscogee Creek Nation, contributing local insights and perspectives.



First Responders and Law Enforcement: Including local police departments, sheriffs, and emergency responders who provide crucial input on road safety and emergency response strategies.



State Transportation Agencies: Collaboration with the Oklahoma Department of Transportation to ensure alignment with state-level transportation and safety strategies.



Educational Institutions, School Districts, and Businesses: Engaged to address transportation safety concerns for youth, employees, and the broader community.



Transportation Groups and Planning Organizations: Offering technical expertise to ensure a comprehensive approach to safety across all travel modes.

Considering the vast geographic area of Muscogee Creek Nation, four regions were identified in order to provide convenient access and increase participation, see **Figure 15**. This also allowed the team to present data and analysis that were specific to each region and collect better feedback.

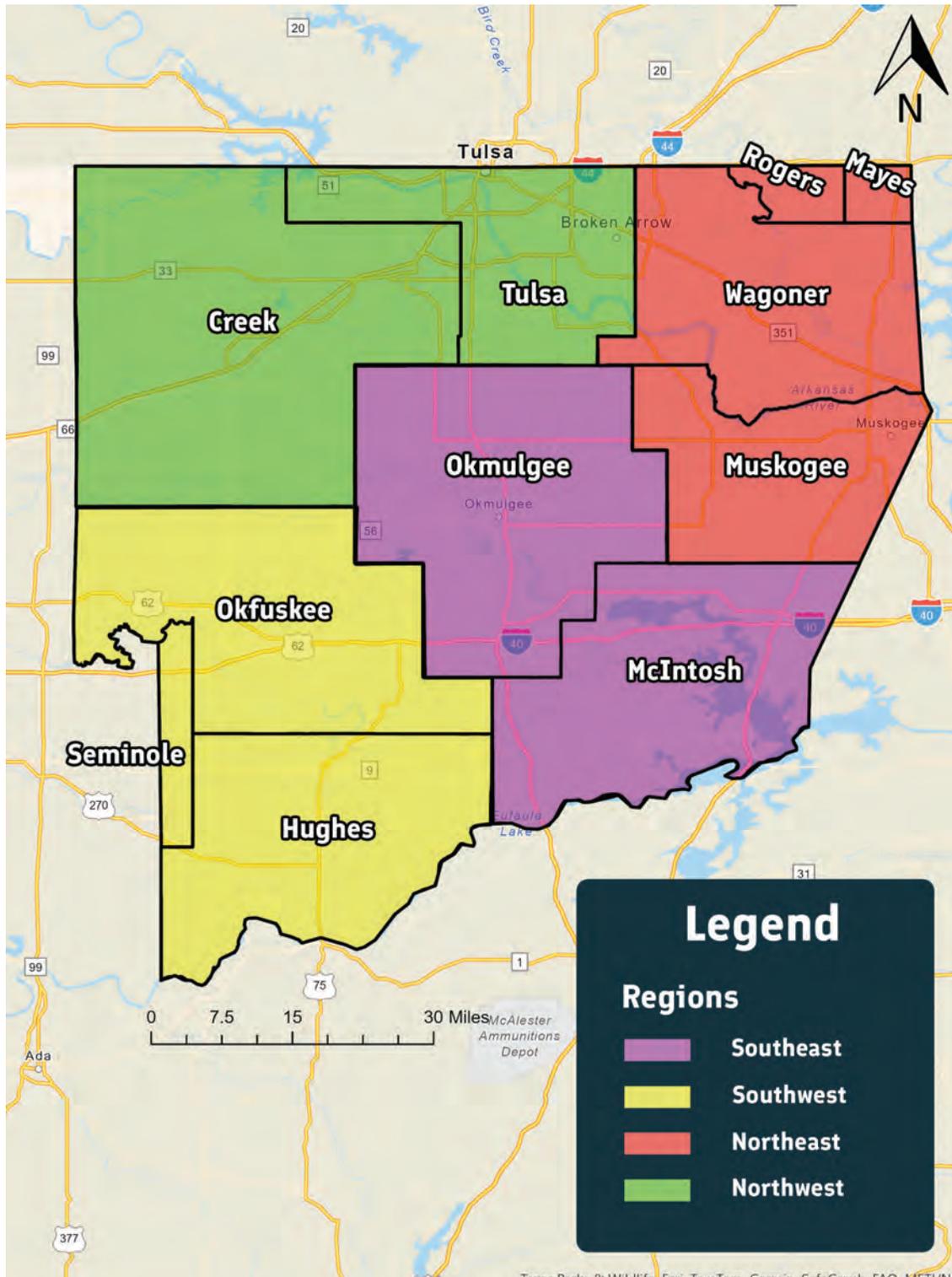


Figure 15 - Defined Regions in the Nation

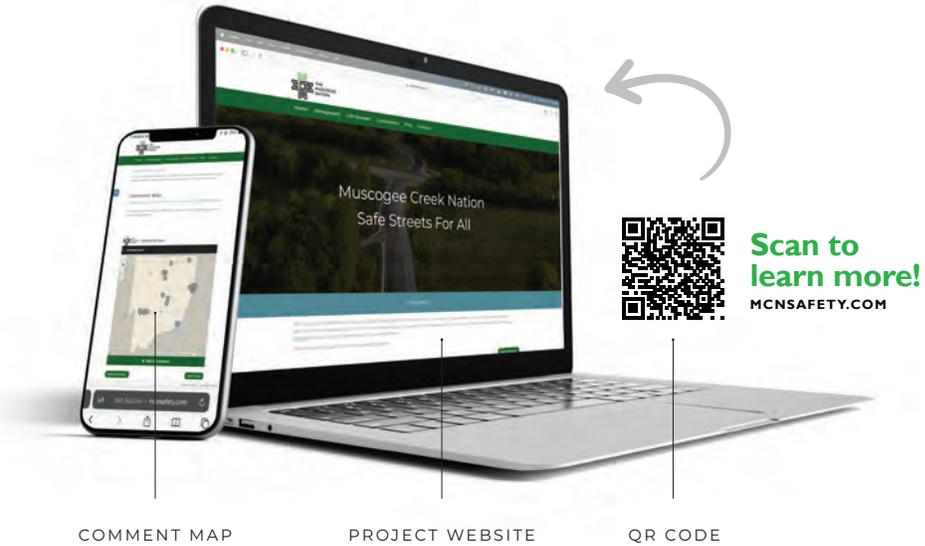


4.2 Strategies



Engagement opportunities were made available from October 2024 to May 2025. These strategies included a project website, helpline, comment map, survey, and public meetings.

Project website: Hosted via an ArcGIS Hub site. This shared what the project is, why input is important, how to get involved, the project timeline and summaries of what was being collected. This was an easy to use, accessible way for people to learn about the project and provide feedback on their own schedule. A custom Uniform Resource Locator (URL) “MCNsafety.com” and Quick Response (QR) code were included in all promotional materials to direct people to the website.



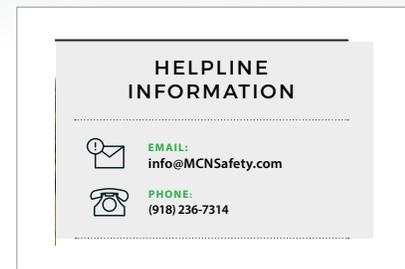
Comment map: An interactive tool that allowed people to add comments to specific locations on a map. This was housed on the project website and was open from September 2, 2024, to March 31, 2025. It received 30 comments regarding specific locations that need safety improvements.

Survey: Hosted on the project website and printed copies were made available. Conducted from September 2 to November 7, 2024, and 24 responses were received.



Helpline: Included an email and phone number to provide a direct way for people to get in touch with the project team to share information and ask questions. Throughout the project 17 inquiries were received and responded to. People reached out to learn more about the Plan and how to be involved. This included receiving 2 maps with locations to include in the Plan and the State Highway 67 Corridor Study for reference.

Public meetings: There were two rounds of meetings.



The first round consisted of 12, in person, meetings held in October 2024. The purpose of these meetings was to educate the public about the SS4A Plan and to gather feedback on roads that could use safety improvements. These were done after the project team completed a preliminary analysis and collected traffic data to paint a picture of the current situation. Participants left feedback on comment cards, via the survey and interactive comment map.



The second round consisted of 2 meetings in March 2025 that allowed attendees to join virtually or in person. The purpose of these meetings was to share the crash data and injury results gathered from ODOT records and from the community. Participants had the opportunity to leave feedback via comment cards and online via the interactive comment map.



MEETING #2

OKMULGEE - March 12th
 Okmulgee Indian Community Center
 6:00 - 7:00pm
 2900 N. Osage Place, Okmulgee, OK 74447
<https://bit.ly/MuscogeeCreekNations54A-1>

MUSKOGEE - March 13th
 Muscogee Indian Community Center
 6:00 - 7:00pm
 335 N. 4th Street, Muskogee, OK 74401
<https://bit.ly/MuscogeeCreekNations54A-2>

These meetings were promoted by:

- Postings on the project website
- Distributing postcards and invitation flyers around Muscogee Creek Nation

- Sending email invites to 565 stakeholders
- Placing newspaper ads in Bristow News, Okmulgee Times, Eufaula Indian Journal, and Okemah News Leader
- Sharing on Facebook

Full meeting summaries can be found in **Appendix D - Survey Results and Meeting Summaries.**

Muscogee Creek Nation Safe Streets for All (SS4A) Comprehensive Safety Action Plan

Upcoming Meetings

We heard from you and now it's time to share our findings before the SS4A Plan is finalized. Join us to review our research and provide input on the Safe Streets for All (SS4A) Plan before it's finalized. Your feedback will help prioritize projects and secure funding for safety improvements across the Muscogee Creek Nation. Let's work together to create safer streets for all! Light snacks and beverages will be provided.

MAP OF THE MUSCOGEE CREEK NATION

| DATE | TIME | LOCATION | VIRTUAL |
|----------------|----------|---|---|
| March 12, 2025 | 6-7 p.m. | Okmulgee Indian Community Center 2900 N. Osage Place, Okmulgee, OK 74447 | https://bit.ly/MuscogeeCreekNations54A-1 |
| March 13, 2025 | 6-7 p.m. | Muscogee Indian Community Center 335 N. 4th Street, Muskogee, OK 74401 | https://bit.ly/MuscogeeCreekNations54A-2 |

Helpline
 EMAIL: info@MCSafety.com
 PHONE: (918) 236-7314



4.3 Findings

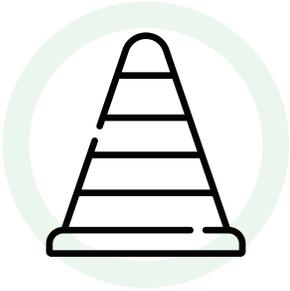
Raw survey results can be found in **Appendix D - Survey Results and Meeting Summaries.**

Key findings from the survey:

| | |
|--|--|
| | Primary mode of transportation: Nearly all respondents (95.65%) use personal vehicles. |
| | Daily travel: 60.87% travel more than 10 miles per day. |
| | Children's school transportation: 61.54% of children are driven by parents. |
| | Safety improvements for commutes to school: Respondents prioritized improved sidewalk conditions, reduced traffic speed limits near schools, and better lighting and surveillance. |
| | Vehicle safety: The two highest responses reported were 70% feel "somewhat safe" in vehicles, while 20% feel "very safe." |
| | Walking safely: The two highest responses reported were 35% feel "somewhat safe" walking and 25% feel "very unsafe". |
| | Bicycle safety: The three highest responses reported were 35% feel "somewhat safe" when cycling, 30% "don't/rarely ride a bicycle", and 20% feel "very unsafe". |
| | Street accessibility: 40% find streets "somewhat accessible" for users. 30% find streets "somewhat inaccessible" and 25% find them "very inaccessible". |
| | Factors impacting transportation safety: Speeding (65%), distracted driving (60%), poor road conditions (60%), and lack of compliance to traffic rules (55%) were the main concerns. |
| | Safety improvement suggestions: The top three intersections or road segments selected for safety improvements were 2-lane rural roads, pedestrian crossings, and signalized intersections. On a scale from most preferred to least preferred, road improvements and increased traffic enforcement were the top two types of improvements that respondents thought would be most effective in improving transportation safety. |
| | Preferred communication channels: On a scale from most preferred to least preferred, respondents from the top three channels preferred for authorities to communicate traffic safety information to them via social media, community meetings, and local news. |
| | Support for the safety committee: 87.5% think forming a committee to enhance existing efforts to make the roads safer would be a good idea. |

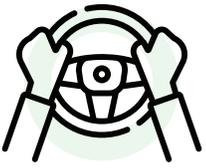
General concerns and suggestions received through the survey, comment map and helpline.

Feedback from the survey, comment map, comment cards and helpline emphasized the need for improved infrastructure, stricter enforcement, and proactive community engagement.



1. Road safety and infrastructure

- a. **Poor road conditions:** Common complaints included potholes, lack of maintenance, flooding, narrow lanes, and dangerous curves.
- b. **Road signage and lighting:** Calls for more and better signage at high-traffic intersections, especially near schools, as well as additional streetlights to enhance visibility.
- c. **Pedestrian safety:** A significant number of comments pointed to the need for more crosswalks, pedestrian signals, and better sidewalk conditions.



2. Driving behavior and enforcement

- a. **Distracted driving:** Respondents raised concerns about distracted driving, particularly due to cell phone use, and advocated stricter penalties.
- b. **Enforcement:** Many suggested the need for better enforcement of speed limits and violations like running red lights and stop signs.
- c. **Speeding:** Several comments focused on the prevalence of speeding, especially in residential areas and near schools.



3. Public awareness and education

- a. **Educational campaigns:** Many respondents recommended education campaigns to raise awareness about safe driving practices, the dangers of distracted driving, and the importance of following traffic laws.
- b. **Driver education:** Some suggestions focused on enhancing driver education programs, particularly for young drivers.



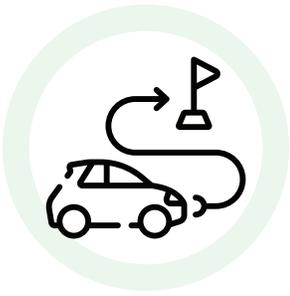
4. Public transportation

- a. **Improving public transportation:** A few comments suggested improving public transportation options to reduce traffic congestion and promote safety.



5. Specific locations for improvements

- a. **Hotspot intersections:** Several respondents pinpointed intersections that require safety improvements, such as those with inadequate signals or poor visibility.
- b. **Congestion:** Some areas were noted for frequent traffic congestion, creating unsafe conditions.
- c. **Cycling safety:** Requests for additional bike lanes to ensure the safety of cyclists.



6. Children's commute to school

- a. **School traffic:** Safety concerns school-related traffic, including the need for more crossing guards and better infrastructure around schools.
- b. **Suggestions:**
 - i. Reduced speed limits in school zones.
 - ii. Improved sidewalks and crosswalks near schools.
 - iii. Increase enforcement of traffic laws during school hours.



7. Cycling and walking

- a. **Cycling safety:** Many respondents felt it was unsafe to ride bicycles, due to poor road conditions, speeding, and lack of bike lanes.
- b. **Walking safety:** A significant number of respondents also felt it was unsafe walking, especially in areas with insufficient sidewalks or pedestrian-friendly infrastructure.



8. Communication and involvement

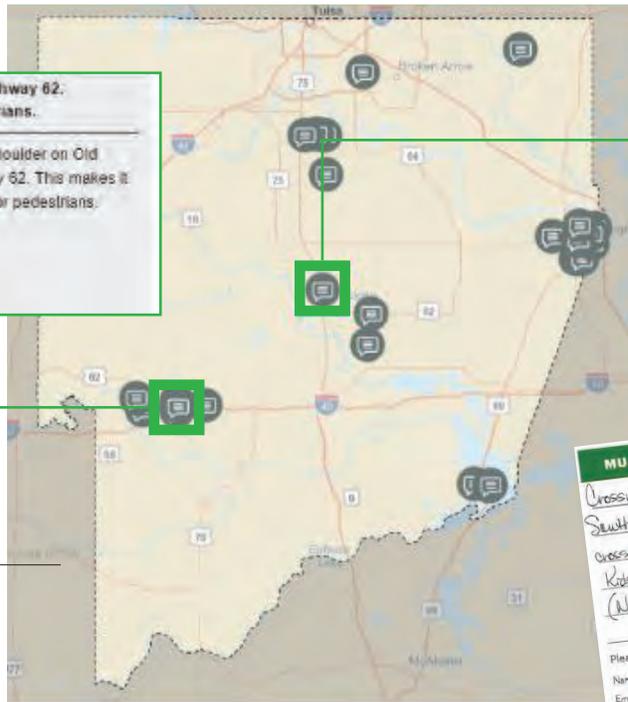
- a. **Safety committee:** Strong support for forming a committee to address road safety issues and engage the community in solutions.
- b. **Communication preferences:** Respondents expressed interest in using various channels like newsletters, social media, and local news to stay informed about safety initiatives.

COMMUNITY INPUT

| | |
|--|---|
| There is no shoulder on Old State Highway 62. This makes it very difficult for pedestrians. | |
| Comment | There is no shoulder on Old State Highway 62. This makes it very difficult for pedestrians. |
| What County Do You Live In? | Okfuskee |
| What City Do You Live In? | Okemah |

COMMUNITY INPUT

| | |
|---|--|
| Lots of Crashes and very hard to turn on and off of HWY 75 | |
| Comment | Lots of Crashes and very hard to turn on and off of HWY 75 |
| What County Do You Live In? | Okfuskee |
| What City Do You Live In? (If Other, Please Fill In The Box) | Okemah |



COMMENT MAP

COMMENT CARD

MUSCOGEE NATION ROADWAY SAFETY PLAN

Crosswalk & lights needed in these areas in town. South West & Northwest side of town have no defined crossings.
Kids walking North on Hwy 52 to go to Eagle Park (No sidewalks) (No pedestrian bridge)

Please print your information below:
 Name: _____ Phone: _____
 Email: _____
 Address: _____

GET INVOLVED & LEARN MORE!
 For more information, visit MCOGee.com
 or scan the QR code. For help, call (918) 236-7314

Disadvantaged Community Considerations



CHAPTER 5 HIGHLIGHTS

- Disadvantaged communities were considered in project priorities in the Safety Action Plan
- Data and partner collaboration identified disadvantaged communities
- 267 census tracts fall under Areas of Persistent Poverty
- Non-dominant populations make up 35.79% of residents, with higher concentrations in some counties
- 8.65% of households lack vehicle access, increasing transportation vulnerability
- Outreach included in-person meetings, virtual options, and multiple feedback tools to reduce participation barriers

Impartiality was a central focus in developing the Muscogee Creek Nation's SS4A Safety Action Plan, guiding both community outreach strategies and project prioritization. The plan was shaped using a comprehensive representative process that reflects the SS4A program's emphasis on public engagement. To support this approach, the team conducted data-driven analyses to identify disadvantaged communities in collaboration with key partners. These analyses considered population characteristics and included preliminary fairness impact assessments for proposed strategies and projects, ensuring that the needs and voices of all community members, especially those historically disadvantaged, were meaningfully integrated into the planning process.

5.1 Analysis and Metrics

To ensure a thorough evaluation of fairness, various datasets provided by the USDOT were reviewed, including the American Community Survey (ACS) data related to non-dominant populations and vehicle ownership. This approach examined population characteristics that inform safety and transportation needs. The primary datasets used for disadvantaged community considerations are summarized in **Table 4**.

Table 4 - Primary Datasets for Disadvantaged Community Considerations

| DATA | SOURCE, YEAR | WHAT THIS SHOWED US | HOW WE USED IT |
|------------------------------------|---------------------------------|---|--|
| AREAS OF PERSISTENT POVERTY | USDOT, 2020 | Identifies geographic areas with consistently high poverty rates over time. | Help reveal if communities with fewer resources experience disproportionately higher road safety risks due to factors like older infrastructure or limited access to safe transportation options. |
| NON-DOMINANT POPULATION | American Community Survey, 2021 | Shows the spatial distribution of non-dominant populations. | Analyzing this alongside crash data can highlight if certain community groups face elevated risks, potentially due to gaps in infrastructure, traffic enforcement, or access to driver safety education. |
| VEHICLE OWNERSHIP | American Community Survey, 2021 | Indicates the percentage of households with vehicle access. | This helps understand mobility patterns and identify communities reliant on walking, cycling, or public transit, which might face higher risks if pedestrian and bicycle infrastructure or public transportation safety measures are inadequate. |

5.1.1 Areas of Persistent Poverty

Persistent poverty is defined by the U.S. Department of Agriculture as counties where 20% or more of the population has lived in poverty over the last 30 years. According to the U.S. Census Bureau's 2021 American Community Survey 5-Year Estimates, **267 census tracts** in Muscogee Creek Nation fall within areas classified as **Areas of Persistent Poverty**. **Figure 16** illustrates these areas. As shown in this figure, no county within Muscogee Creek Nation is fully outside of areas of persistent poverty. The entirety of Okfuskee County, Seminole County and Mayes County, along with the majority of McIntosh County fall within areas of persistent poverty as well as parts of the remaining counties within Muscogee Creek Nation.

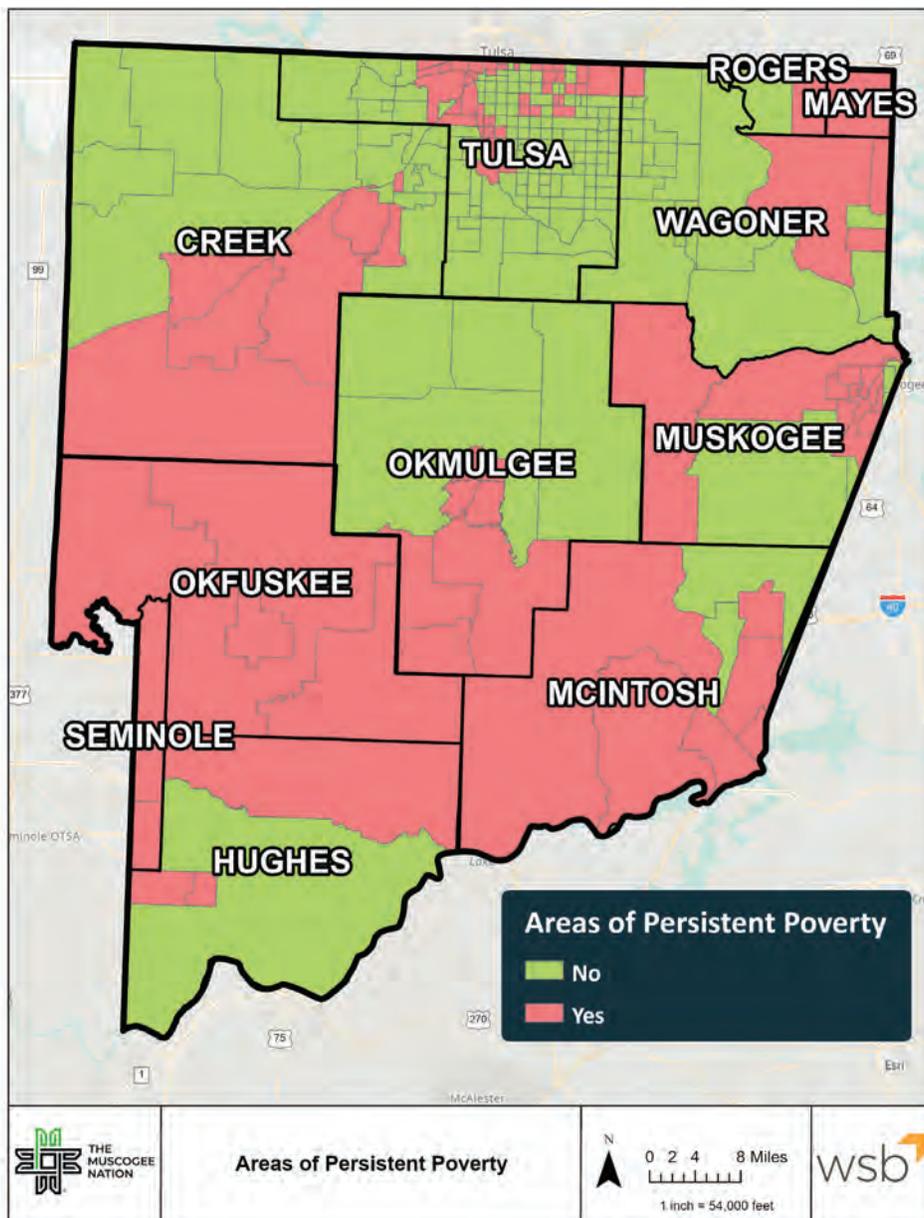


Figure 16 - Areas of Persistent Poverty

The Disadvantaged Communities dataset was also assessed in alignment with the SS4A Notice of Funding Opportunity (NOFO) guidelines. However, the entirety of the Muscogee Creek Nation falls within the area defined as Disadvantaged, as illustrated in **Figure 17**.

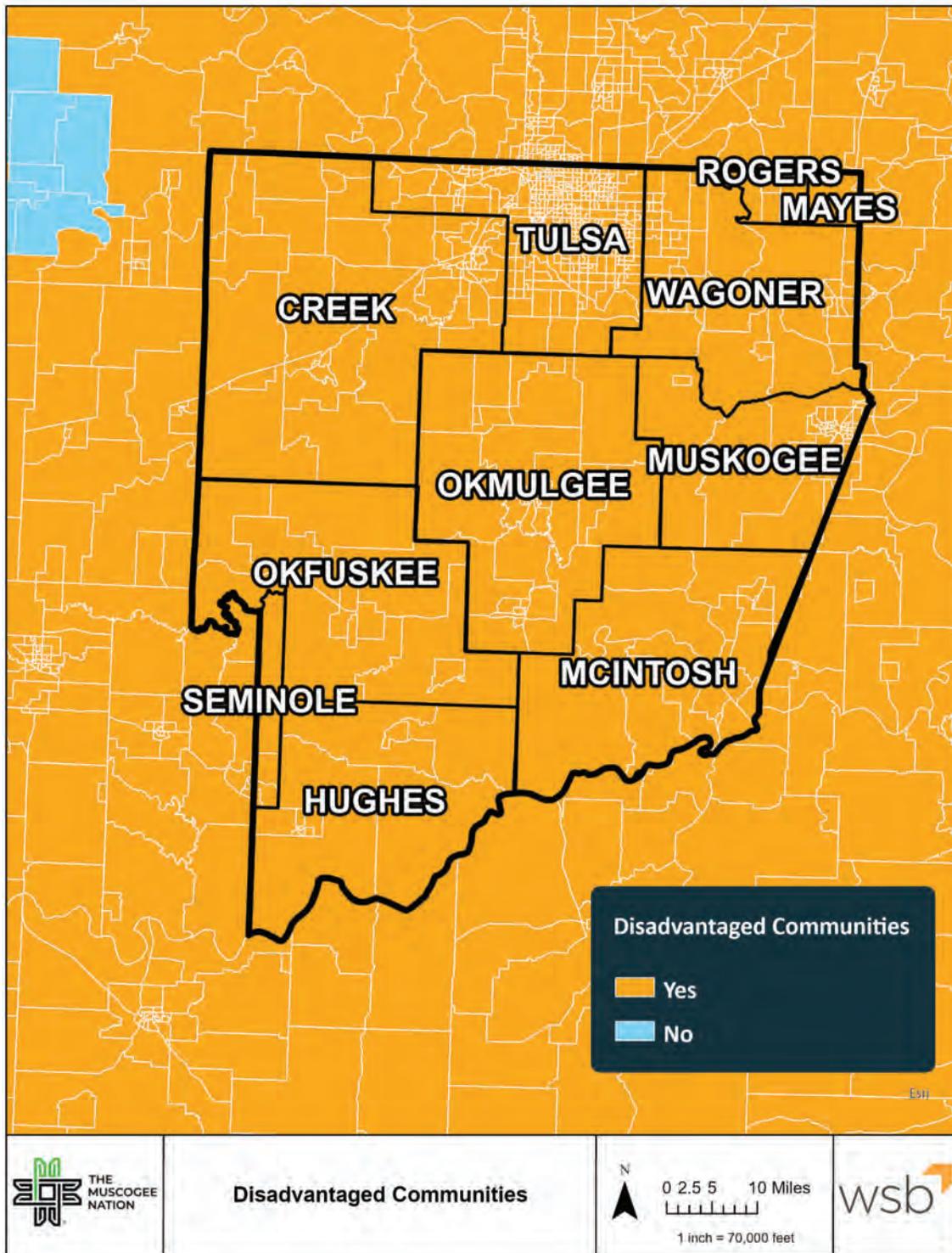


Figure 17 - Disadvantaged Communities

5.1.2 Non-dominant Population

The majority of the population within Muscogee Creek Nation is White, with a notable Native American population and smaller populations of African American, Spanish, and Asian descent. In this plan, non-dominant populations are defined as all races except White. Approximately **35.79%** of the population is classified as a non-dominant. **Figure 18** illustrates the distribution of non-dominant populations across the census tracts within Muscogee Creek Nation. As shown in this figure, parts of Muskogee, McIntosh, and Tulsa Counties have higher percentages of non-dominant populations. Okfuskee and Okmulgee Counties also have relatively high percentages of non-dominant populations.

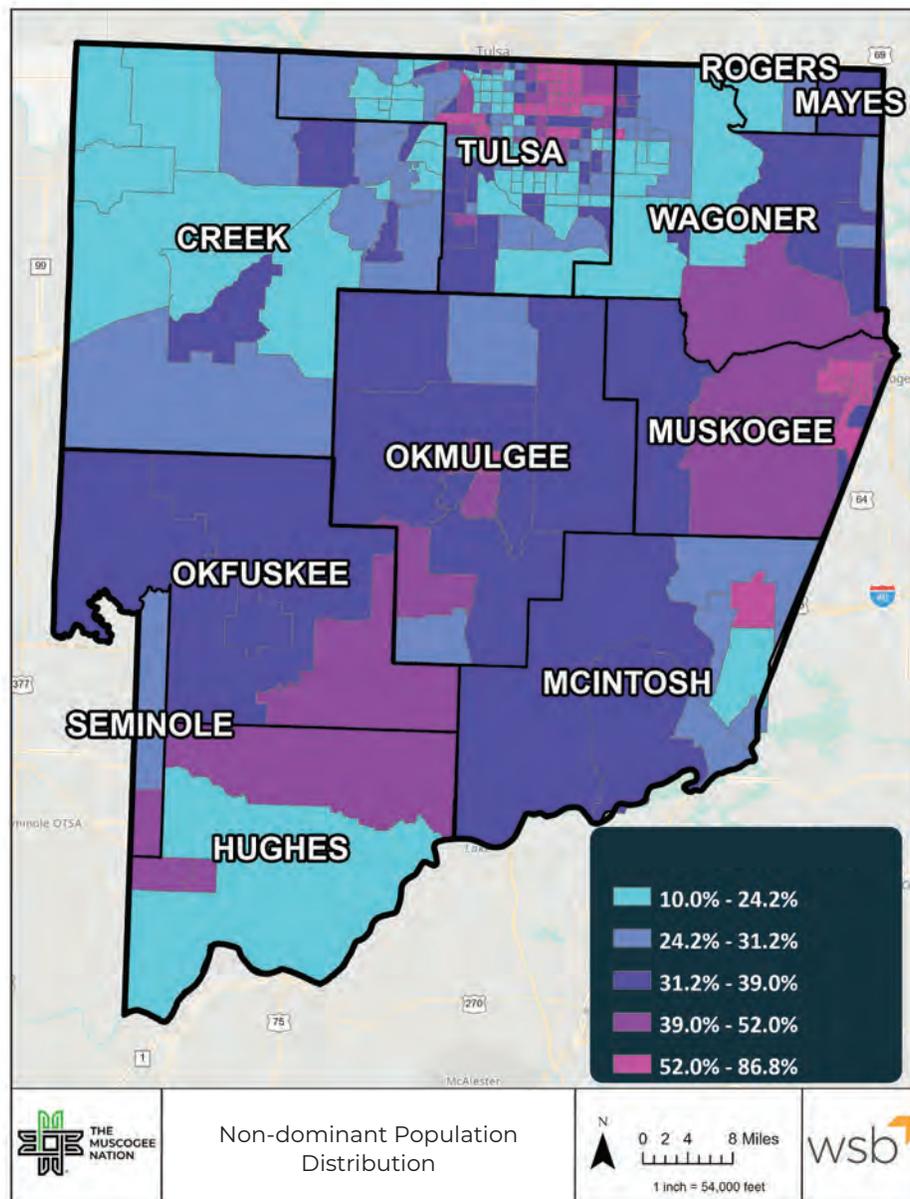


Figure 18 - Non-dominant Population Distribution



5.1.3 Vehicle Ownership

Approximately **8.65% of households** within the Muscogee Creek Nation Reservation do not have access to a vehicle. Lack of vehicle ownership is a critical issue, especially in rural and tribal areas where public transportation is often limited or unavailable. Without access to a personal vehicle, households may struggle to reach employment opportunities, schools, healthcare services, grocery stores, and other essential destinations.

From a roadway safety perspective, individuals without vehicles are more likely to walk, bike, or depend on others for transportation. These alternative modes can expose them to higher crash risk, particularly in areas that lack pedestrian or cyclist infrastructure.

Integrating vehicle ownership data into the safety planning process enables Muscogee Creek Nation to better identify vulnerable populations and prioritize investments in multimodal infrastructure, traffic calming measures, and connectivity improvements. This approach directly ensures that disadvantaged and transportation-disadvantaged communities receive targeted safety improvements.

Figure 19, Household Vehicle Ownership, illustrates the percentage of households without vehicles across each census tract within the Muscogee Creek Nation Reservation.

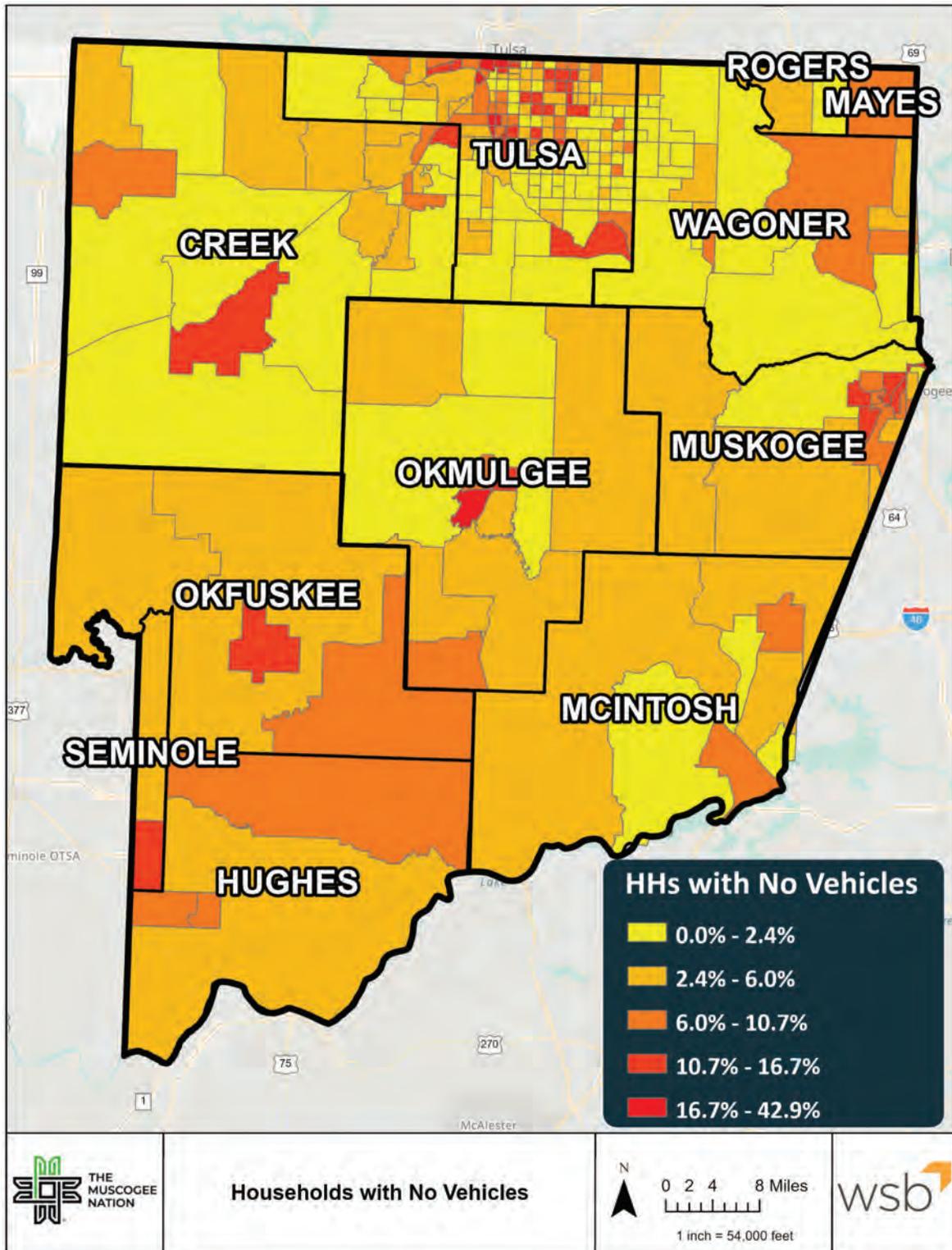


Figure 19 – Household Vehicle Ownership

5.2 Strategies for Underserved Community Outreach



Impartiality was also considered in the development of the SS4A Safety Action Plan during public outreach and engagement. To ensure public outreach included various populations, including non-dominant, low-income, and elderly residents, the following elements were included:

- Public meetings, hosted in October 2024, occurred in six different locations over a span of two weeks across the entire Nation. This was to provide accessibility for all communities including disadvantaged communities, detailed in Chapter 4.
- During the public meetings hosted in March 2025, a virtual option was provided to offer another method to present information and solicit feedback from the various communities across the entire Nation to include those who are disadvantaged.
- The project website was established to provide communication and transparency to the project. It was used as a communication tool to deliver information about the project and provide a feedback loop for the Nation's residents, community members, those employed in the community and the many stakeholders who serve the Nation.
- A survey (on-line and hard copy), a comment map, email address and a 24-hour hot-line were other tools utilized to gather public input as well as provide an avenue for community members to ask questions or voice concerns about transportation safety in their communities. These strategies provided flexible alternatives for people to participate and reduce barriers for public input and engagement.

Existing Plans, Policy, and Process Review



CHAPTER 6 HIGHLIGHTS

- Review of MCN, federal, state, tribal, and county transportation safety plans and policies
- Assessment of alignment with SS4A and the Safe System Approach
- Focus on crash data, roadway, pedestrian, bike, transit, and emergency response safety in these plans
- Limited county-level plans; recommended adoptions of the MCN SS4A Plan
- MOUs support interagency coordination and resource sharing
- Emphasis on plan updates, data sharing, and stakeholder collaboration
- Recommended improvements for crash data systems, safer transit, and protection for vulnerable users

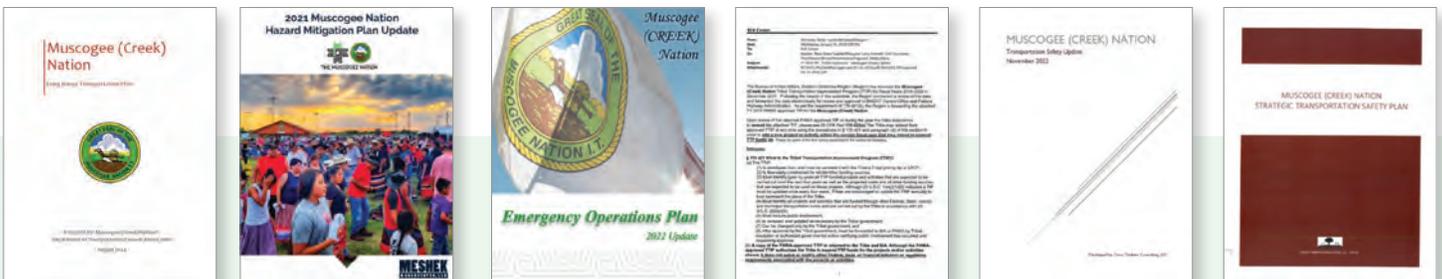


Existing Plans, Policy, and Process Review

6.1 Existing Relevant Muscogee Creek Nation Plans

Existing Muscogee Creek Nation plans that address transportation safety were collected and reviewed. For each plan, recommendations were documented that address transportation safety & data analysis, roadway safety & infrastructure, public transit safety, bicycle & pedestrian safety, emergency response & coordination, public education, safety project development, and implementation.

The following Muscogee Creek Nation existing plans and documents were reviewed:



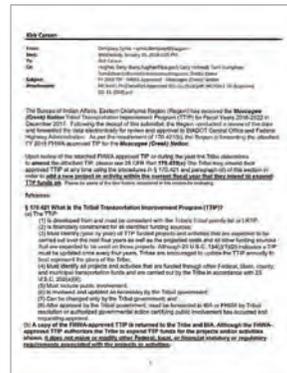
- Muscogee (Creek) Nation Long Range Transportation Plan (2024)
- Muscogee (Creek) Nation Transportation Safety Update (November 2022)
- Muscogee (Creek) Nation Emergency Operations Plan (2022 Update)
- Muscogee Nation Hazard Mitigation Plan Update (2021)
- Muscogee (Creek) Nation Title 22: Health and Safety
- Muscogee (Creek) Nation Strategic Transportation Safety Plan (2014)

6.2 Existing Federal/Tribal Plans

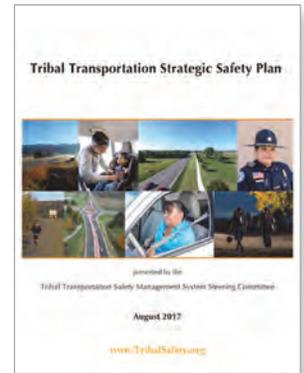
Federal and Tribal plans that address transportation safety were collected and reviewed. Items looked for in each plan included but were not limited to crash data quality, sharing and integration, funding opportunities, law enforcement collaboration, planning, roadway safety, and general strategies to improve transportation safety. For each plan, recommendations were made on the topics covered in the plan.

The following Federal and Tribal existing plans and documents were reviewed:

A



B



- A • Report to Congress – Options for Improving Transportation Safety in Tribal Areas (2018)
- B • Tribal Transportation Strategic Safety Plan (2017)
- C • Tribal Governments & Transportation Safety Data (2016)
- D • Safe Routes to School in Tribal Communities; National Center for Safe Routes to School

C



D



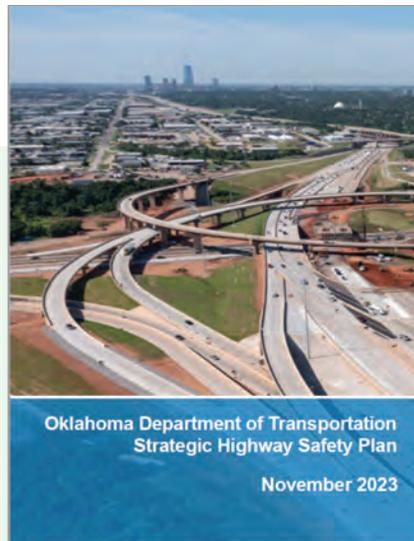
6.3 Existing Oklahoma Statewide Plans

Oklahoma plans that address transportation safety were reviewed as a part of this Safety Action Plan. Each plan had a focus on reducing crashes by various methods to include education, infrastructure, countermeasures, enforcement, performance measures, collaboration, and providing safe alternatives for travelers. Each plan provided recommendations and opportunities for a safe traveling environment and a commitment to traffic crash reduction.

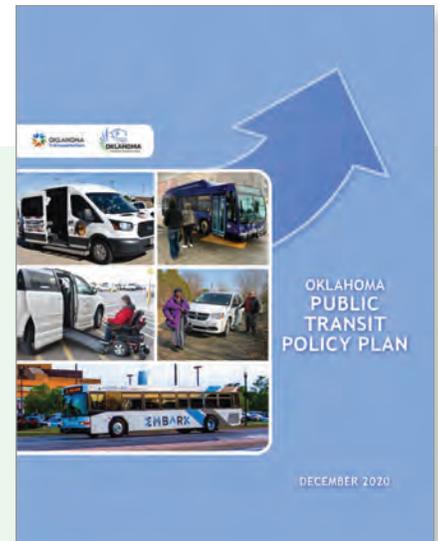
The following State-Level plans were reviewed:



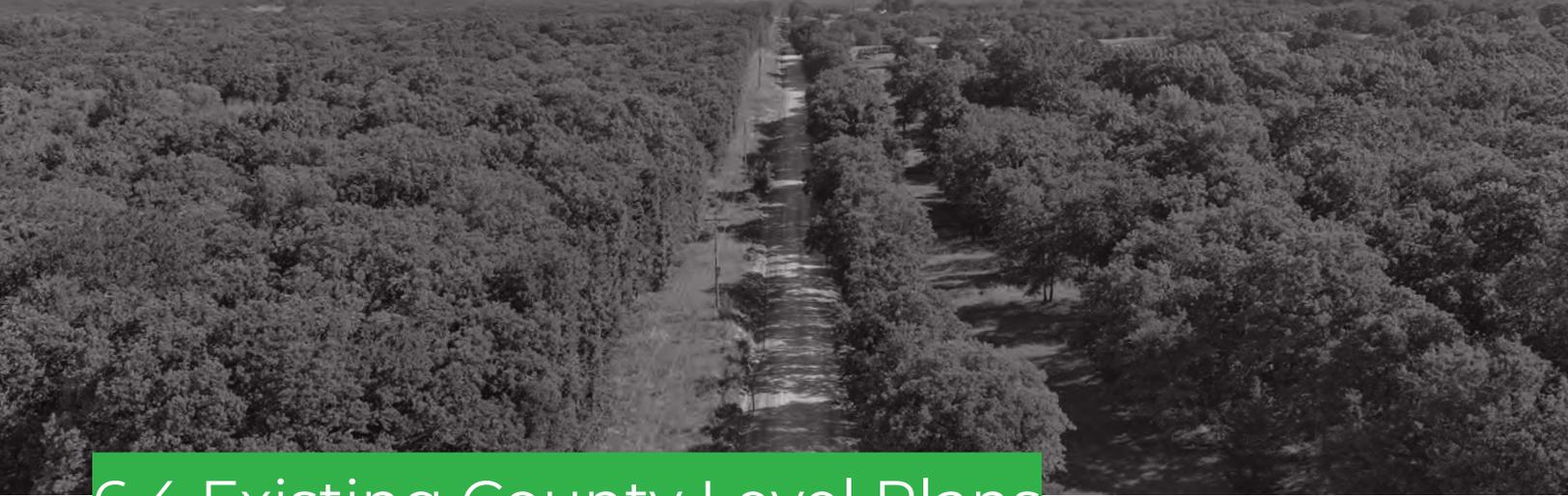
- Oklahoma Triennial Highway Safety Plan (2024-2026)



- Oklahoma Department of Transportation Strategic Highway Safety Plan (November 2023)



- Oklahoma Public Transit Policy Plan (December 2020)



6.4 Existing County Level Plans

County plans also contribute to reducing fatal and serious injury crashes and improving transportation safety in Muscogee Creek Nation. After a thorough search, very few plans or documents were found to be available for public review. The few documents that were located are listed below; however, they were not reviewed as part of this project.

The following County-level plans have been identified but not reviewed:

- **Creek County**
 - Creek County Planning and Zoning Regulations
 - Subdivision Regulations for Creek County, Oklahoma
- **Okmulgee County**
 - Okmulgee Comprehensive Plan (2030)
- **Rogers County**
 - Rogers County Comprehensive Plan (2023)
- **Seminole County**
 - Seminole County Comprehensive Plan (2012)
- **Tulsa County**
 - Tulsa County Home & Consortium & Tulsa County Community Development Block Grant Urban County Five Year Consolidation Plan 2023-2027 & Program Year 2023 Annual Action Plan
- **Wagoner County**
 - Wagoner County Comprehensive Plan (2023-2025)



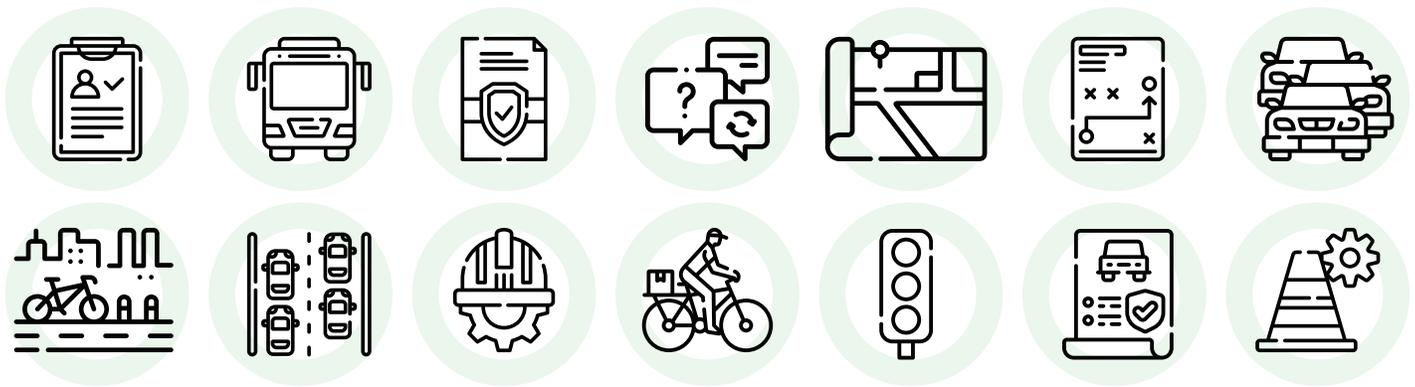
6.5 Memorandums of Understanding (MOU) & Agency Agreements

MOU's and agency agreements play a role in transportation safety, disaster & emergency response, law enforcement activities, transit & public transportation, and resource sharing. These are the existing MOU's and agency agreements for Muscogee Creek Nation:

- **Inter-Tribal Emergency Management Coalition**
 - Formed in 2004 to enhance disaster preparedness across 39 tribes in Oklahoma
 - No official MOU yet, but efforts are underway to formalize cooperation
- **Muscogee Creek Nation Transit Department & Cherokee Transit Department**
 - Allow tribal transit vehicles to cross jurisdictional boundaries for passenger transport
- **Okmulgee County OEM & Muscogee Creek Nation EM**
 - A mutual aid agreement for emergency management planning, response, and recovery
- **National Tribal Emergency Management Council**
 - Provides a network for tribal emergency management programs, promoting sovereignty
- **KI BOIS Area Transit System & City of Okmulgee**
 - Enhances public transportation coordination in emergencies
- **Lighthouse Police Department & County Sheriff's Office**
 - Strengthens law enforcement collaboration in emergency situations

These MOUs reinforce regional cooperation, resource sharing, emergency preparedness and safety to enhance the resilience of the Muscogee Creek Nation and its partners.

6.6 Key Findings



The development, maintenance, and updating of transportation safety plans, documents, MOUs, policies, and procedures are crucial for ensuring the overall safety of the Muscogee Creek Nation's roadway network. The creation and maintenance of these plans and integrated training sessions facilitate collaboration and resource sharing among Federal, State, County, and Municipal stakeholders. These documents aim to enhance roadway safety and infrastructure, improve transportation safety & crash data analysis, advance public transit safety enhancements, promote bicycle & pedestrian safety initiatives, and refine emergency response & coordination efforts.

Additionally, the various activities surrounding these plans, documents, and agreements create opportunities for stakeholders to exchange knowledge on best practices in transportation safety, present educational opportunities, and provide future safety project ideas.



6.7 Recommendations for Transportation Safety

Several plans were reviewed from the Federal and State Level to include plans from Muscogee Creek Nation. Various safety-related themes were prominent throughout many of the planning documents. It is recommended that each County within Muscogee Creek Nation review and adopt the Muscogee Creek Nation SS4A Safety Action Plan and take part in its successful implementation. Development of other jurisdiction-specific transportation safety plans is also recommended and should be integrated into the Muscogee Creek Nation SS4A Safety Action Plan. Additional recommendations include:

- Improve crash data accuracy & sharing, create a centralized crash database
- Increase partnerships across all Federal, State, County and local emergency responders and support personnel
- Develop a safety culture through partnership, collaboration, data collection, information sharing, and emergency response
- Expand and share daily transit services and resources; provide safe transit services during disasters and emergency response
- Provide safe transit services with technology integration, infrastructure safety measures, and partnerships
- Identify roadway and infrastructure safety improvements and countermeasures based on citizen input and data analysis; this is for daily roadway use as well as emergency response and recovery
- Provide safe and adequate facilities for pedestrians and bicyclists
- Protect vulnerable road users through crash data analysis, countermeasures, education and awareness
- Conduct law enforcement high visibility enforcement and educational campaigns
- Enhance emergency response coordination and communication with Traffic Incident Management Plans
- Provide transportation safety education and awareness for all road users
- Address poor driving behaviors through legislation, enforcement and education



Project Prioritization and Recommendations

CHAPTER 7 HIGHLIGHTS

- Data-driven approach to identify hotspot locations
- Multi-criteria framework developed with the MCN Oversight Team
- Public and stakeholder input considered for location identification
- Evaluation criteria and Measures of Effectiveness (MOEs) used for prioritization
- Hotspot locations ranked using a composite index combining crash and non-crash factors
- Two analyses: one for all users, another for vulnerable road users (pedestrians and cyclists)
- Projects categorized by implementation timelines: short-term (1-3 years), medium-term (3-5 years), and long-term (5+ years)
- Safety strategies and countermeasures
- Multimodal enhancements, pedestrian and bicycle infrastructure, traffic calming, signage, and lighting improvements
- Strategies align with the Safe Systems Approach
- Projects and strategies are flexible, allowing for selection based on available funding opportunities
- Metrics for tracking progress on each strategy and action

Project Prioritization and Recommendations

7.1 Prioritization Process

Ensuring roadway safety within the Muscogee Creek Nation requires a data-driven and broad approach to identifying and addressing hotspot locations. This SS4A Action Plan includes a structured and transparent prioritization process to guide the selection of projects that improve safety outcomes for all users, particularly vulnerable communities.

The process begins with a comprehensive screening and evaluation of roadway segments and intersections across the Nation's transportation network. A multi-criteria framework—developed in coordination with the Muscogee Creek Nation Oversight Team was used to score each location based on its safety performance, community context, and other key factors aligned with SS4A goals. Public and stakeholder input also informed the identification of locations with local safety concerns.

The list of evaluation criteria and associated Measures of Effectiveness (MOE) used to prioritize locations is shown in **Table 5**. Additional details outlining how each MOE was developed and its role in assessing the corresponding criterion can be found in the **Prioritization Criteria & MOE memo**, included in **Appendix F**.



Table 5 - Prioritization Criteria and MOEs

| CRITERIA | MOE |
|--|--|
| #1. SAFETY | • Crash Rate (CR) |
| | • Number of Total Crashes (NTC) |
| | • Crash Reoccurrence (CR) |
| | • High Crash Reoccurrence (CR) |
| | • High Injury Network (HIN) |
| #2. UNDERSERVED COMMUNITIES | • Areas of Persistent Poverty (APP) |
| | • Urban-Rural Classification (URC) |
| | • Non-dominant Population (NDP) |
| | • Vehicle Ownership (VO) |
| | • Area of Disadvantaged Communities (ADC) |
| #3. COMMUNITY ENGAGEMENT | • Public/Stakeholder Input (PSI) |
| #4. PROXIMITY | • Proximity to Casinos/Schools/Railroad Crossings (PCSR) |
| #5. VULNERABLE USERS | • Pedestrian Crash Rate (PCR) |
| | • Bicycle Crash Rate (BCR) |
| #6. SYNERGY WITH OTHER PROJECTS | • Addressed by Other Projects (e.g. INCOG) (AOP) |
| #7. TRAFFIC VOLUME | • Annual Average Daily Traffic (AADT) |
| #8. ROADWAY FUNCTIONAL CLASSIFICATION | • Roadway Classification Type (RCT) |

To identify the hotspot locations, an index-based ranking method was applied, incorporating both crash-related and non-crash-related factors. Each location was evaluated and scored using this composite index. The ranking index formula used in the analysis is shown below, with details on the weighting and calculation process provided in **Appendix F - Project Prioritization Criteria MOE Memo**:

$$Ranking\ Index = \left[\sum (CRA_i * W_{CRA_i}) \right] * \prod NCRA_i$$

Where:

- CRA: crash-related MOE
- WCRA: weight assigned to each crash-related MOE
- NCRA: weighting multiplier (factor) of each non-crash-related MOE.
- ∏: product symbol, which calculates the multiplication of all non-crash-related MOEs factors

Two distinct analyses were conducted: one encompassing all users and another specifically focused on vulnerable road users (pedestrians and bicyclists). Initial hotspot lists were generated for both groups and refined based on factors such as segment proximity, overlapping risk locations, and crash severity thresholds. Through this process, a set of 20 hotspot locations—for both roadway segments and intersections were identified, with an emphasis on areas outside the INCOG boundary and excluding freeways and major arterials based on roadway functional classifications. Muscogee Creek Nation also provided a list of locations with identified roadway geometry and safety concerns. Some of these locations were already selected through the prioritization process, and those that were not selected were included in the final list to ensure all relevant safety concerns were considered.

Figure 20 illustrates the overall prioritization

process, from data collection and scoring to final project selection. Details of the rating and ranking process for hotspot location selection are provided in the memo titled “**Rating and Ranking Process for Hotspot Location Selection and Project Prioritization**,” in **Appendix G**.

Table 6 and **Table 7** present hotspot locations for roadway segments and intersections respectively. **Figure 21** and **Figure 22** visualize the selected locations in relation to INCOG boundaries and roadway classifications and HIN respectively.

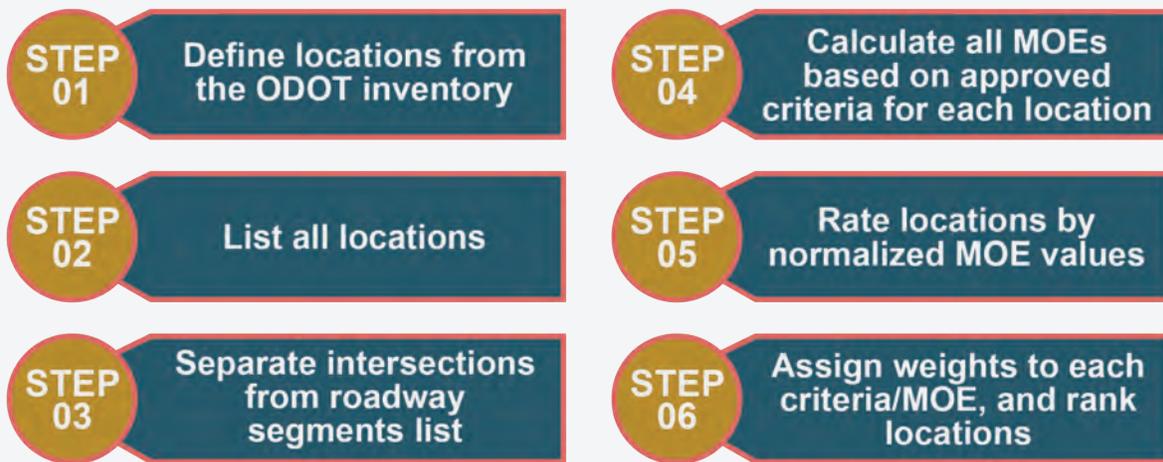


Figure 20 - Prioritization Process

Table 6 – Proposed 23 Hotspot Locations (Combined VRU and non-VRU) for Roadway Segments

| LOCATION RANK | SOURCE LIST (VRU/NON-VRU) | LOCATION | ON HIN |
|---------------|---------------------------|--|--------|
| 1 | Both | N York St from Old Shawnee Rd to E Okmulgee St, Muskogee | Yes |
| 2 | Both | S Broadway St from W Jefferson Ave to Maple St, Checotah | Yes |
| 3 | Non-VRU | Highway 62 from East of N 6th St Curves, Morris | Yes |
| 4 | Both | US Highway 62 from N 3740 Rd to N 7th St, Okemah | Yes |
| 5 | Both | EW 133 Rd (270) from N 374 Rd to N 379 Rd | Yes |
| 6 | Non-VRU | Highway 266 from N 4070 Rd to N 4120 Rd | Yes |
| 7 | Non-VRU | Hectorville Rd from N 220 Rd to N 250 Rd | Yes |
| 8 | Non-VRU | E 7th St from S Okmulgee Ave to S Grand Ave, Okmulgee | Yes |
| 9 | Non-VRU | Sharp Rd from S 200 Rd to S 205 Rd, Okmulgee | Yes |
| 10 | Non-VRU | Ferguson Rd from N 310 Rd to Bixby Rd | Yes |
| 11 | Non-VRU | State Highway 9 from State Highway 48 to N 377 Rd | Yes |
| 12 | Non-VRU | State Highway 9 from E 123 Rd to McComb Ave | Yes |
| 13 | Non-VRU | State Highway 56 from EW 1120 Rd to N 3690 Rd, Schoolton | Yes |
| 14 | Non-VRU | Gibson St from N York St to Civitan Park, Muskogee | Yes |
| 15 | Non-VRU | W Highway 16 from Highway 62 to S 134th St W | Yes |
| 16 | Both | E Okmulgee St from S Main St to Spaulding Blvd, Muskogee | No |
| 17 | Both | N 11th St from W Shawnee St to Tamaroa St, Muskogee | Yes |
| 18 | Non-VRU | State Highway 52 from Highway 16 to Massingale Rd | Yes |
| 19 | Non-VRU | US Highway 75 from 3rd St to Bad Creek | Yes |
| 20 | Non-VRU | Conifer Rd from Wilson Rd to Highway 75 | Yes |
| 21 | Public Input* | Hwy 48 from N3720 Rd to N3730 Rd, Bearden | No |
| 22 | Public Input* | New Lake Rd around Lake Henryetta | No |
| 23 | Public Input* | Lake Rd from New Lake Rd to Main St, Henryetta | No |

*These locations were not selected based on the rating and scoring process but were included in the final list as part of the safety concern locations provided through public input.

Table 7 - Proposed 29 Hotspot Locations (Combined VRU and non-VRU) for Roadway Segments

| LOCATION RANK | SOURCE LIST (VRU/NON-VRU) | LOCATION | ON HIN |
|---------------|---------------------------|--|--------|
| 1 | Both | E Shawnee Rd & N Main St, Muskogee | Yes |
| 2 | Non-VRU | E Shawnee Rd & N 6th St, Muskogee | Yes |
| 3 | Non-VRU | Highway 75 and Ferguson Rd | Yes |
| 4 | Non-VRU | N Main St & Court St, Muskogee | Yes |
| 5 | Non-VRU | E Shawnee Rd & N York St, Muskogee | Yes |
| 6 | Non-VRU | E Shawnee Rd & N County Club Rd, Muskogee | Yes |
| 7 | Both | W Okmulgee St & N 32nd St, Muskogee | Yes |
| 8 | Non-VRU | W Shawnee Rd & Chicago St, Muskogee | Yes |
| 9 | Non-VRU | E Shawnee Rd & N 11th St, Muskogee | Yes |
| 10 | Non-VRU | Highway 75 and Hectorville Rd | Yes |
| 11 | Non-VRU | W Okmulgee St & Honor Heights Dr, Muskogee | Yes |
| 12 | Both | W Shawnee Rd & N 32nd St, Muskogee | Yes |
| 13 | Non-VRU | W Okmulgee St & S Main St, Muskogee | Yes |
| 14 | Non-VRU | N Main St & S Kinsley St, Muskogee | Yes |
| 15 | Non-VRU | Highway 75 and Will Sampson Rd, Preston | Yes |
| 16 | Non-VRU | N 32nd St & W Broadway St, Muskogee | Yes |
| 17 | Non-VRU | N 32nd St & Tahlequah St, Muskogee | No |
| 18 | Non-VRU | W Okmulgee St & N 24th St, Muskogee | Yes |
| 19 | Non-VRU | S 7th St & Elgin St, Muskogee | Yes |
| 20 | Non-VRU | W Okmulgee St & N 54th St, Muskogee | Yes |
| 21 | Public Input* | Highway 75 & Gun Club Rd | No |
| 22 | Public Input* | E 1100 Rd RR Crossing, Onapa | No |
| 23 | Public Input* | Lake Rd & W Main St, Henryetta | No |
| 24 | Public Input* | S 2nd St & W Main St, Henryetta | No |
| 25 | Public Input* | Old Hwy 62 & Hwy 56 | No |
| 26 | Public Input* | Hwy 66 & Slick Rd | No |
| 27 | Public Input* | E 151st St S & Warrior Rd, Glenpool | No |
| 28 | Public Input* | E 151st St S & S Peoria Ave, Glenpool | Yes |
| 29 | Public Input* | E 151st St S & S Lewis Ave, Glenpool | No |

*These locations were not selected based on the rating and scoring process but were included in the final list as part of the safety concern locations provided through public input.

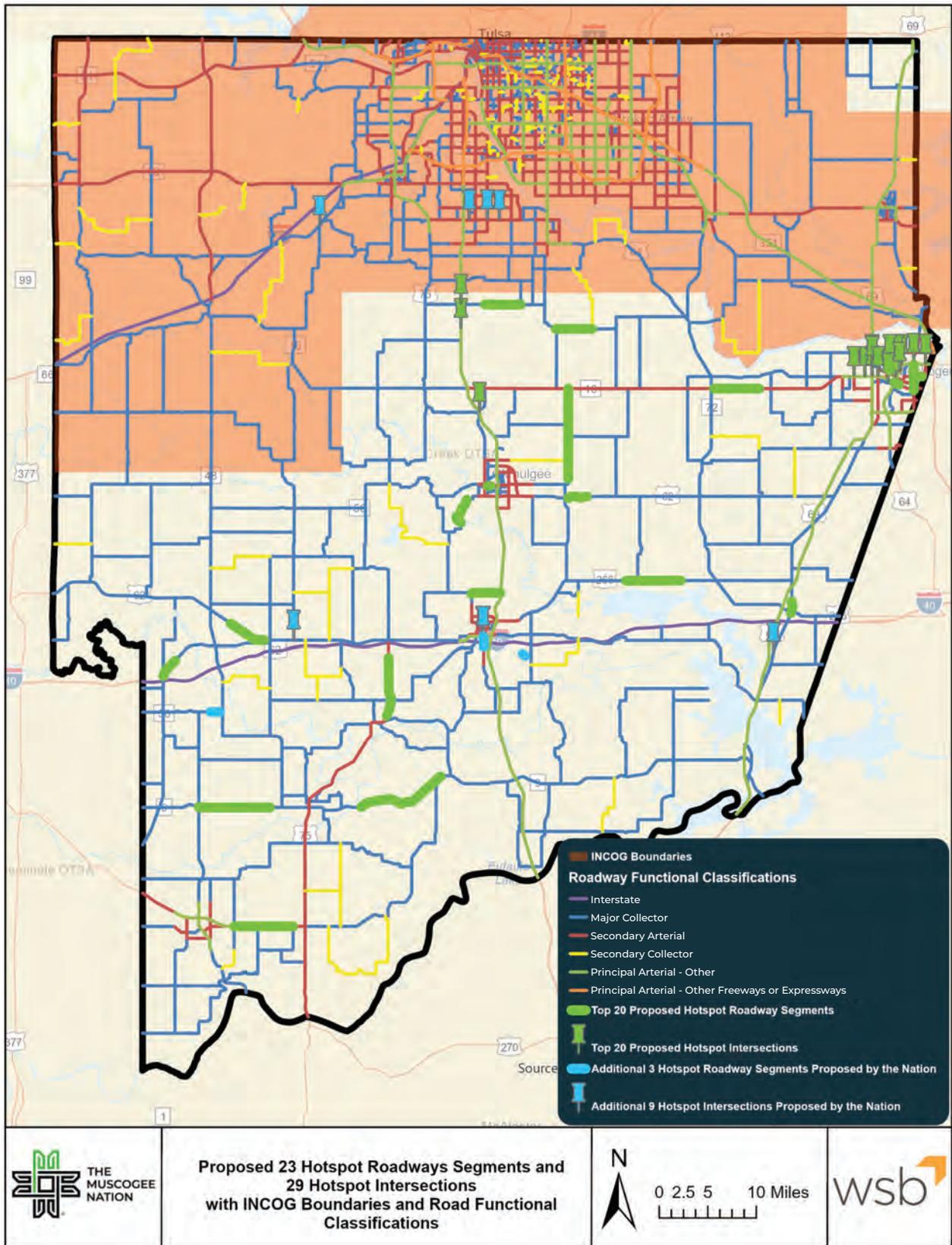


Figure 21 - Proposed Hotspot Locations – With INCOG Boundaries and Road Classifications

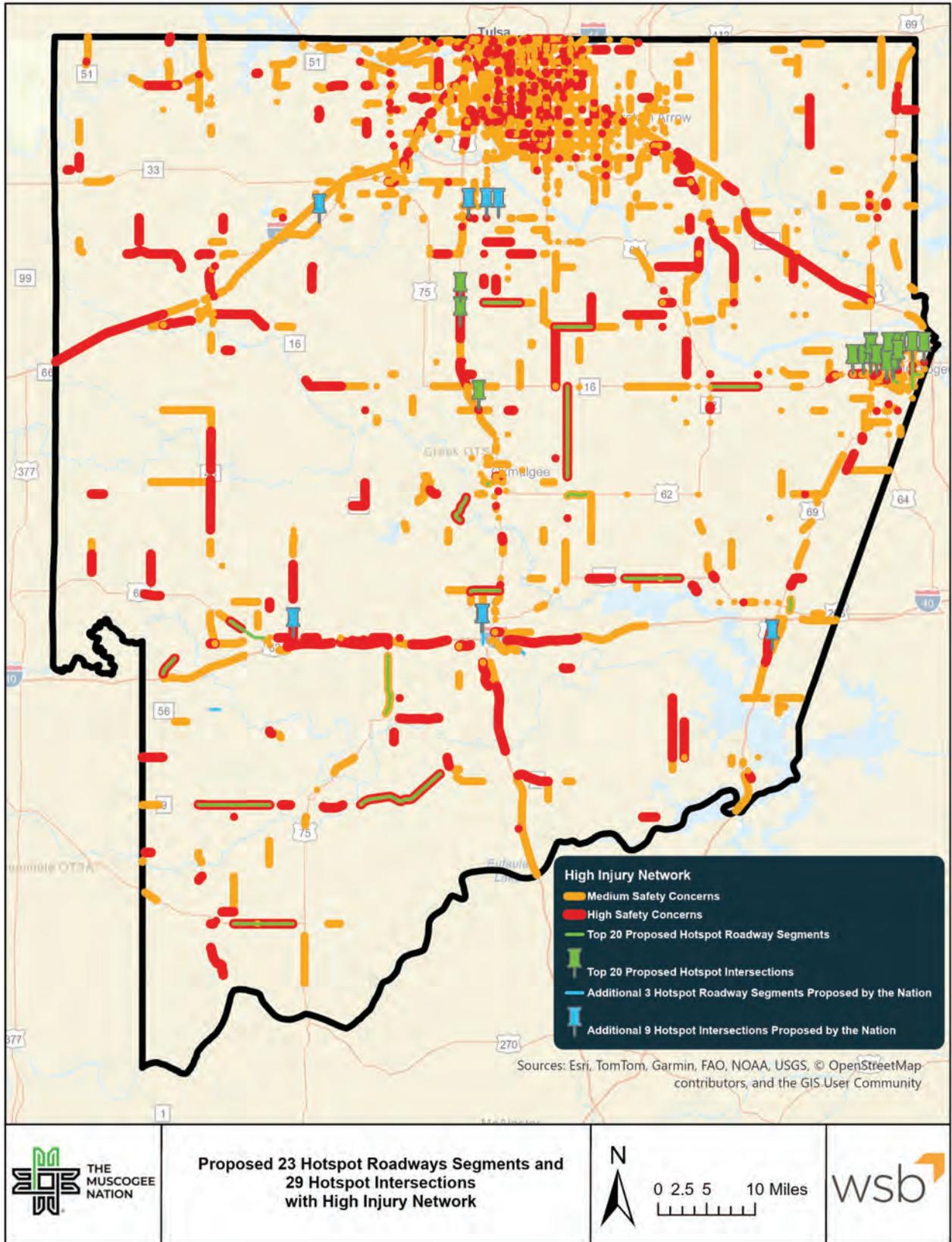


Figure 22 - Proposed Hotspot Locations – With High Injury Network



7.2 Safety Strategies and Countermeasures



The Safety Action Plan includes strategies and countermeasures based on data collection, crash analysis, and public engagement. Improved, accurate and comprehensive crash data collection and sharing is essential for planning transportation safety improvements, strategies, and projects. Lack of quality and comprehensive crash data makes it very difficult to compare crash data across state, local, and federal agencies. Determining crash patterns and trends becomes very difficult and challenging under circumstances such as these.

It is recommended to enhance crash data quality by encouraging the use of the National Highway Traffic Safety Administrations Model Minimum Uniform Crash Criteria (MMUCC) to standardize crash reports across tribal, state, and federal agencies. The MMUCC is a voluntary guideline that represents a minimum, standardized set of data variables to describe motor vehicle traffic crashes, which could be used to identify traffic safety problems and design countermeasures to improve traffic safety nationally and in each state.

Other strategies include:



- Research and apply for capital funding to implement infrastructure improvements in areas identified as priorities in this plan.



- Advocate for "Complete Streets" policies that ensure safe access for all road users. These policies require streets to be planned, designed, operated, and maintained for safe, convenient, and comfortable travel for everyone, regardless of transportation mode.



- Implement Safe Streets to School in all local school districts. This process focuses on creating a safe, convenient, and fun environment for all students by addressing traffic safety issues like traffic congestion, pedestrian safety, and infrastructure improvements.



- Conduct Road Safety Audits to continue to find ways to reduce fatal and injury crashes. They seek to use an independent, multidisciplinary team to identify road safety issues and opportunities for all users. This can also be integrated into the project development process.



- Review processes and procedures on how transportation safety projects are currently being evaluated after implementation and how that information is used. Develop a policy to guide what metrics projects should be evaluated by, based on the type and scale of the project.

The plan organizes strategies and actions into short-term (1–3 years), medium-term (3–5 years), and long-term (5+ years) timeframes, following the principles of the **Safe System Approach**.

Through a combination of public and stakeholder input and an in-depth analysis of five years of crash data, the assessment identified key safety concerns at both roadway segments and intersections, with particular focus on the proposed 23 hotspot roadway segments and the proposed 29 hotspot intersections. In response, a list of mitigation strategies and countermeasures

has been developed, including **Crash Modification Factors (CMFs)** where available, to guide decision-making and help quantify the anticipated safety benefits of each action.

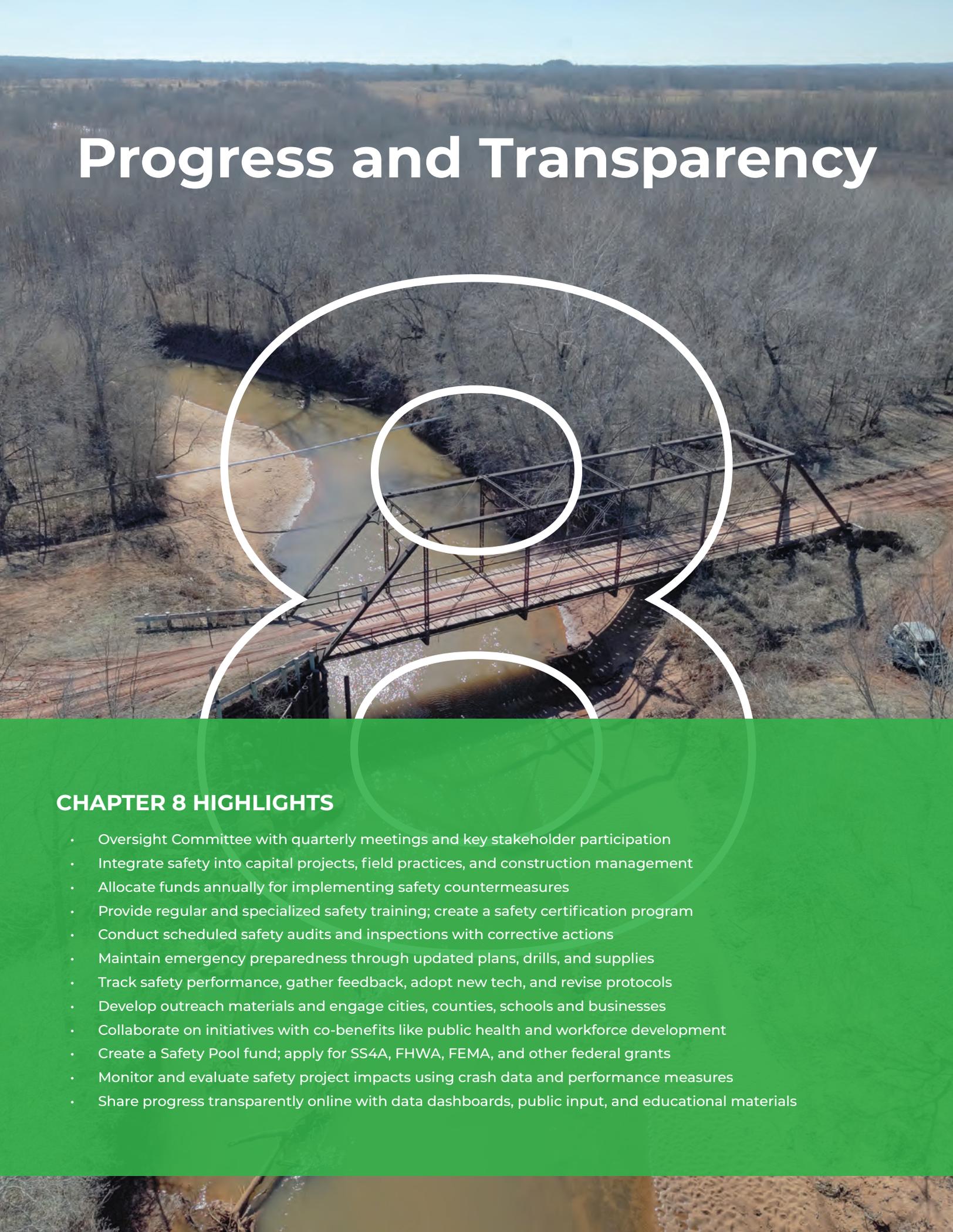
Identified safety concerns, recommended countermeasures, implementation timelines, and CMFs to support a data-driven approach to prioritizing and implementing safety improvements are summarized in **Appendix H - Safety Issues – Hotspot Locations, Recommended Countermeasures and CMF - Section H.1**.

In addition to identifying and documenting the proposed hotspot roadway segments and intersection locations — along with the associated geometric, safety concerns and contributing factors, as summarized in **Appendix H - Safety Issues – Hotspot Locations, Recommended Countermeasures and CMF Section H.2. Table 8** outlines the recommended systemwide safety improvements and mitigation strategies. These recommendations are grounded in a data-driven, comprehensive safety analysis and align with the principles and objectives of the Safe System Approach to advance proactive and systemic safety

Table 8 - Systemwide Safety Improvements and Mitigation Strategies

| SYSTEMWIDE SAFETY IMPROVEMENT CATEGORY | SAFETY IMPROVEMENT / MITIGATION STRATEGY |
|--|---|
| SAFER ROADS (ROADWAY) | Widen shoulders on two-lane, two-way rural roadways to meet safety standards. |
| | Install or upgrade speed limit and advisory speed signs, especially at curves. |
| | Optimize traffic signal placement for visibility and compliance. |
| | Install delineator posts and chevron reflectors along curves and key locations. |
| | Refurbish pavement markings and implement appropriate, high-visibility striping. |
| | Install or enhance school bus stop delineators for improved visibility. |
| | Adjust the mounting height of existing signs (e.g., stop signs) for uniformity. |
| | Conduct signing inventory and improve consistency in signage systemwide. |
| SAFER ROADS (INTERSECTIONS) | Ensure uniformity in traffic signal head placement and distance from stop bars. |
| | Install redundant signal heads for enhanced visibility. |
| | Standardize signal head types (3, 4, or 5-section heads) for consistency. |
| | Add or upgrade pedestrian crosswalks at major intersections, including pedestrian signals, push buttons, and detection systems. |
| | Install “RIGHT LANE MUST TURN RIGHT” signs for designated right-turn lanes. |
| | Improve pavement striping quality and ensure retroreflectivity for nighttime visibility. |
| | Install Crossroad / Intersection Advance Warning signs with advisory speed panels. |
| | Enhance lighting at wide rural intersections for nighttime visibility and safety. |
| SAFER PEOPLE | Provide ongoing safety training for all employees. |
| | Implement specialized training programs for staff operating in hotspot locations. |
| | Develop and maintain a safety compliance certification program. |
| | Ensure all new hires complete comprehensive safety orientation sessions. |
| POST CRASH CARE | Develop Traffic Incident Management (TIM) Plans in collaboration with stakeholders. |
| | Establish Memorandums of Understanding (MOUs) with neighboring jurisdictions for coordinated emergency response. |

Progress and Transparency



CHAPTER 8 HIGHLIGHTS

- Oversight Committee with quarterly meetings and key stakeholder participation
- Integrate safety into capital projects, field practices, and construction management
- Allocate funds annually for implementing safety countermeasures
- Provide regular and specialized safety training; create a safety certification program
- Conduct scheduled safety audits and inspections with corrective actions
- Maintain emergency preparedness through updated plans, drills, and supplies
- Track safety performance, gather feedback, adopt new tech, and revise protocols
- Develop outreach materials and engage cities, counties, schools and businesses
- Collaborate on initiatives with co-benefits like public health and workforce development
- Create a Safety Pool fund; apply for SS4A, FHWA, FEMA, and other federal grants
- Monitor and evaluate safety project impacts using crash data and performance measures
- Share progress transparently online with data dashboards, public input, and educational materials

Progress and Transparency

8.1 Overview

This Safety Action Plan provides a foundation, as well as specific recommendations to achieve the goals set forth by the Muscogee Creek Nation. This section outlines several strategies to ensure progress towards the implementation of the plan, and providing for systematic oversight and accountability. Several success factors have been identified described in the subsections, below.

- Oversight Committee
- Integration of safety into all business practices
- Advocacy and collaboration
- Funding sources
- Data and performance measures
- Transparency and reporting



The current Safety Action Plan Oversight Committee should meet quarterly or as otherwise determined by the committee with the goal of ensuring progress in implementation of all aspects of the plan, and updating the plan as needed. The Oversight Committee membership should consist of key stakeholders such as relevant Muscogee Creek Nation departments, law enforcement and ODOT. Members of the public or key businesses may be members or collaborators.

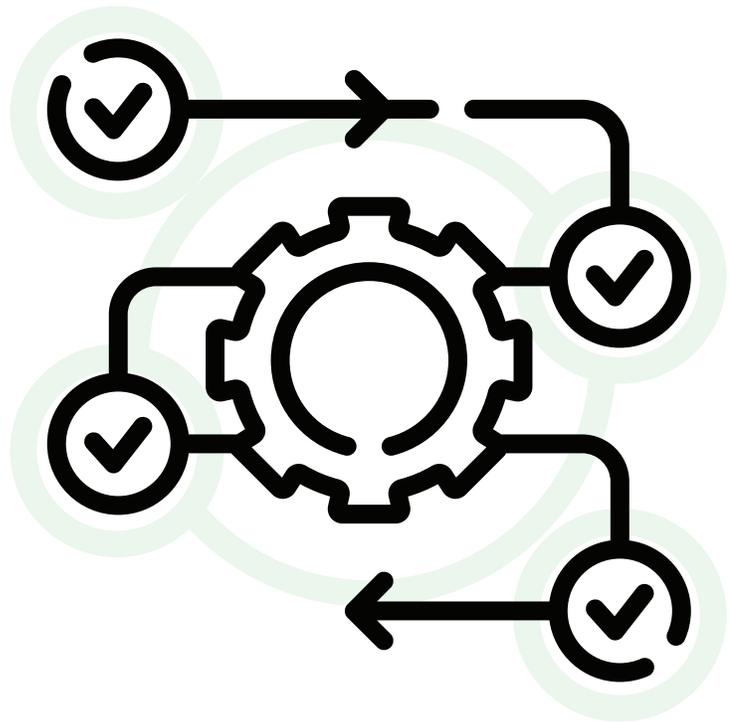


8.2 Integration of Safety into All Business Practices

This group of strategies aims at creating an organization wherein transportation safety becomes a priority and is recognized across all areas of activity.

8.2.1 Policies and Guidelines

Adopting appropriate policies and guidelines will provide trigger points to address safety at a programmatic level. Examples of potential actions are:



- Require capital improvement projects to address safety within project limits when feasible
 - Develop guidelines and criteria
- Develop and implement safety procedures and requirements for Muscogee Creek Nation field staff
- Consider setting aside annual funds to implement Safety Action Plan countermeasures
- Prioritize work zone safety in construction management and construction traffic control processes
- Create guidelines and criteria requiring a safety audit or assessment during project development to inform the selection of appropriate safety improvements



8.2.2 Safety Training

Effective safety training is critical for reducing risks and ensuring that all staff are knowledgeable about safety protocols. This section highlights the importance of training and lists key initiatives.

- Provide regular safety training for all employees
- Implement specialized training for hotspot locations
- Develop a certification program for safety compliance
- Ensure all new hires receive comprehensive safety orientation
- Distribute training and safety brochures to schools and community centers

8.2.3 Emergency Preparedness

Preparing for emergencies is vital for minimizing the impact of unexpected events. This section provides specific steps and initiatives to bring about such preparedness:

- Develop and implement Traffic Incident Management Plans
- Create and update emergency response plans
- Conduct regular emergency drills
- Develop a communication plan for emergencies
- Ensure availability of emergency equipment and supplies





8.3 Advocacy and Collaboration

Advocacy and collaboration are essential for promoting safety and engaging various stakeholders. The following steps outline examples of initiatives to effectively advocate and collaborate:



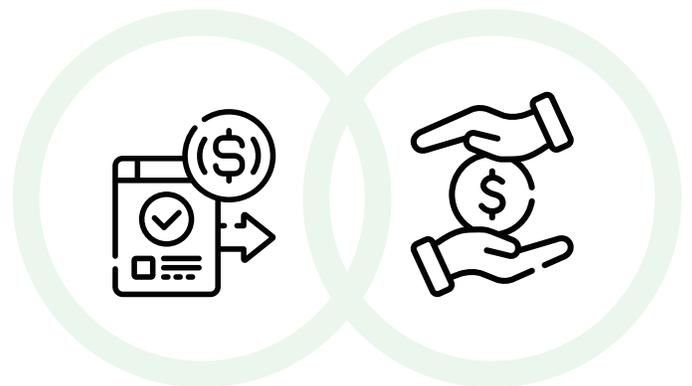
- Develop informational and educational material with focus on transportation safety
- Engage cities and counties as partnering agencies to promote safety, for example Muscogee Creek Nation could serve in advisory role for City of Tulsa stakeholder efforts such as transportation and health-related task forces
- Develop partnerships that advance co-benefits such as workforce development, public health and safety so efforts are cost-effective and integrate related efforts.
- Seeking endorsement and partnership from cities and counties in support of implementing plan recommendations
- Engage schools, businesses and public transportation providers



8.4 Funding

Securing adequate funding is crucial for the successful implementation of safety projects. Here are several strategies to consider:

- Consider a set-aside Safety Pool to be used for stand-alone safety projects, or to add safety improvements to other planned projects.
 - Consider doing so in collaboration and partnership with cities and counties.
- Apply for safety funds distributed through ODOT, for example:
 - Transportation Alternatives Program (TAP)
 - Safe Routes to School (SRTS)
 - Municipal Road Drilling Activity Funds
 - Other ODOT programs <https://oklahoma.gov/odot/programs-and-projects.html>
- Consider other federal grant opportunities including grants that could leverage and complement SS4A implementation projects with co-benefits such as workforce development access, hazard prevention, air quality, flood mitigation, infrastructure investment, resilience, and rural access. For example,:
 - Reconnecting Communities Pilot (RCP) Grant Program (<https://www.transportation.gov/reconnecting>)
 - Better Utilizing Investments to Leverage Development (BUILD) Grant Program | US Department of Transportation
 - Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation Program (PROTECT) | US Department of Transportation) offers two types of awards: planning grants and Competitive Resilience Improvement Grants.





8.5 Data and Performance Measures

Collecting and analyzing data is vital for tracking progress and identifying areas for improvement. The following steps help establish effective data and performance measures:

- Establish a multi-year plan of projects addressing identified safety issues
- Compile information about projects in design or construction addressing safety
- Conduct before-after studies to document the benefits of implemented projects
- In collaboration with ODOT, compile crash statistics and comparison tables to document progress in reducing fatal and serious injury crashes

8.6 Transparency and Reporting

Transparency and regular reporting ensure accountability and community engagement. Consider these measures:

- Dedicate space to transportation safety on the Muscogee Creek Nation website
- Disseminate data and performance measures Muscogee Creek Nation on the website
- Consider semi-annual reporting
- Provide the ability for the public to provide input

APPENDIX A

SUPPLEMENTARY DATA ON THE MUSCOGEE CREEK NATION OVERVIEW

Appendix A

Supplementary Data on the MCN Overview

A.1 Key Landmarks and Traffic Generators

Figure 1 highlights key landmarks and traffic generators within the Muscogee Creek Nation (MCN), i.e., 12 casinos and 280 public schools.

Casinos are key landmarks, serving as economic and social hubs that generate revenue for local communities. As popular destinations for visitors, they are critical points of focus in a road safety plan. Ensuring safe access to and from these locations is essential to reducing accident risks and enhancing transportation safety. The Nation is home to 280 **public schools**, including elementary, middle, and high schools. These schools are high-traffic areas, especially during school hours. Strengthening road safety measures near schools is important to create a secure environment for children, minimizing risks associated with pedestrian and vehicular interactions.

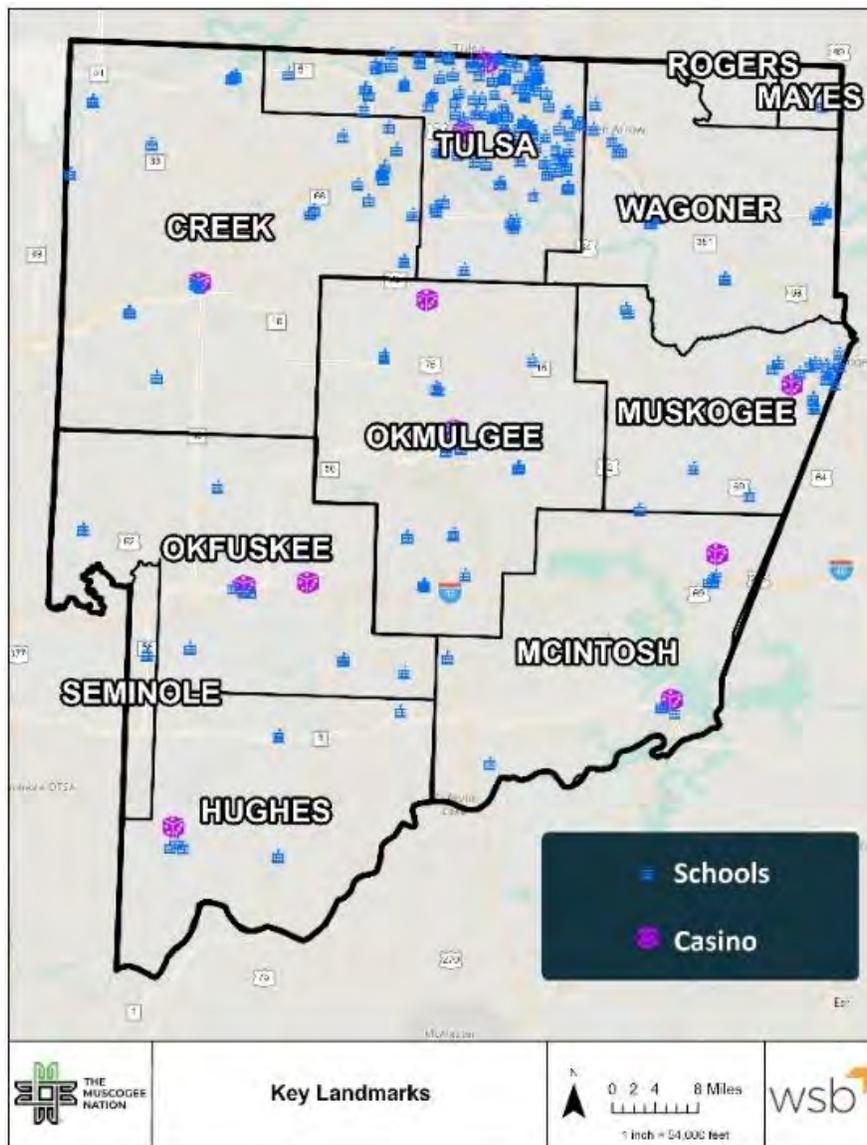


Figure 1 - Key Landmarks and Traffic Generators within Muscogee Creek Nation

A.2 Additional Data on Roadway Network Analysis

A.2.1 Geographic Distribution of Annual Average Daily Traffic (AADT) Classifications

Figure 2 displays the spatial distribution of roadways within the Muscogee Creek Nation based on the AADT classification described in Section 2.2. It visually represents areas of low, medium, and high traffic volume, as determined by the Jenks Natural Breaks algorithm.

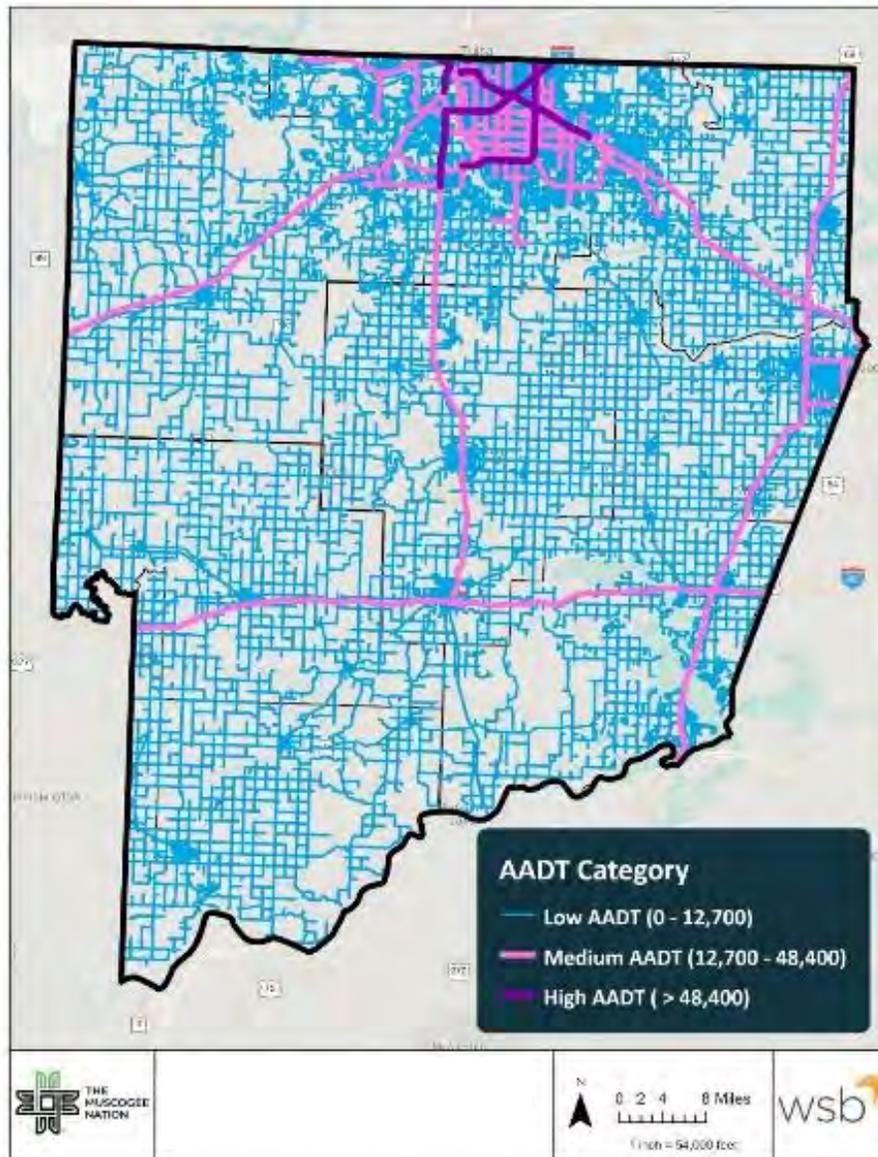


Figure 2 - Geographic Distribution of Roadways Based on AADT Thresholds

A.2.2 Shoulder Width Analysis

Shoulders play a critical role in roadway safety by providing space for emergency stops, accommodating non-motorized users, and improving overall traffic operations. The American Association of Highway and Transportation Officials (AASHTO) Green Book establishes specific shoulder width thresholds for different roadway types. **Table 1** presents these thresholds as defined by AASHTO.

Table 1: Shoulder Width Thresholds by Roadway Type

| Roadway Type | Inadequate Shoulder Width | Adequate Shoulder Width | More than Adequate Shoulder Width |
|--|---------------------------|-------------------------|-----------------------------------|
| High-Speed, High-Volume Roads (e.g., Interstate, Principal Arterial) | < 10 ft | 10–12 ft | > 12 ft |
| Secondary Arterials & Major Collectors | < 6 ft | 6–8 ft | > 8 ft |
| Secondary Collectors & Low-Volume Highways (Local) | < 2 ft | 2–6 ft | > 6 ft |

Table 2 presents the distribution of roadway mileage based on shoulder width adequacy across different road types in Muscogee Creek Nation:

- **Secondary Collector and Local Roads** – The majority (76.5%) have inadequate shoulder width.
- **Secondary Arterials & Major Collectors** – A significant portion (21.8%) have inadequate shoulders, but some (98.7%) exceed the required width.

High-Speed, High-Volume Roads (Interstate and Principal Arterials) – Most (39.5%) meet the required width, with only a small percentage (1.7%) falling short.

Figure 1, Figure 2, and Figure 3 show the three categories of shoulder width adequacy for each roadway type, visually illustrating the distribution of shoulder conditions across the Muscogee Creek Nation road network.

Table 2: Distribution of Roadway Types by Shoulder Condition in MCN

| Road Type | Shoulder Width | | |
|---|------------------------------------|--------------------------------------|--|
| | Mileage with Adequate Width (Mile) | Mileage with Inadequate Width (Mile) | Mileage with More than Adequate Width (Mile) |
| | Number (%) | | |
| Secondary Collector and Local Roads | 350.1 (33.5%) | 7675.34 (76.5%) | 0.75 (0.5%) |
| Secondary Arterials & Major Collectors | 282.13 (27%) | 2186.05 (21.8%) | 157.01 (98.7%) |
| High-Speed, High-Volume Roads (Interstate and Principal Arterial) | 411.72 (39.5%) | 175.56 (1.7%) | 1.28 (0.8%) |
| Total | 1,043.95 (100%) | 10,036.95 (100%) | 159.04 (100%) |

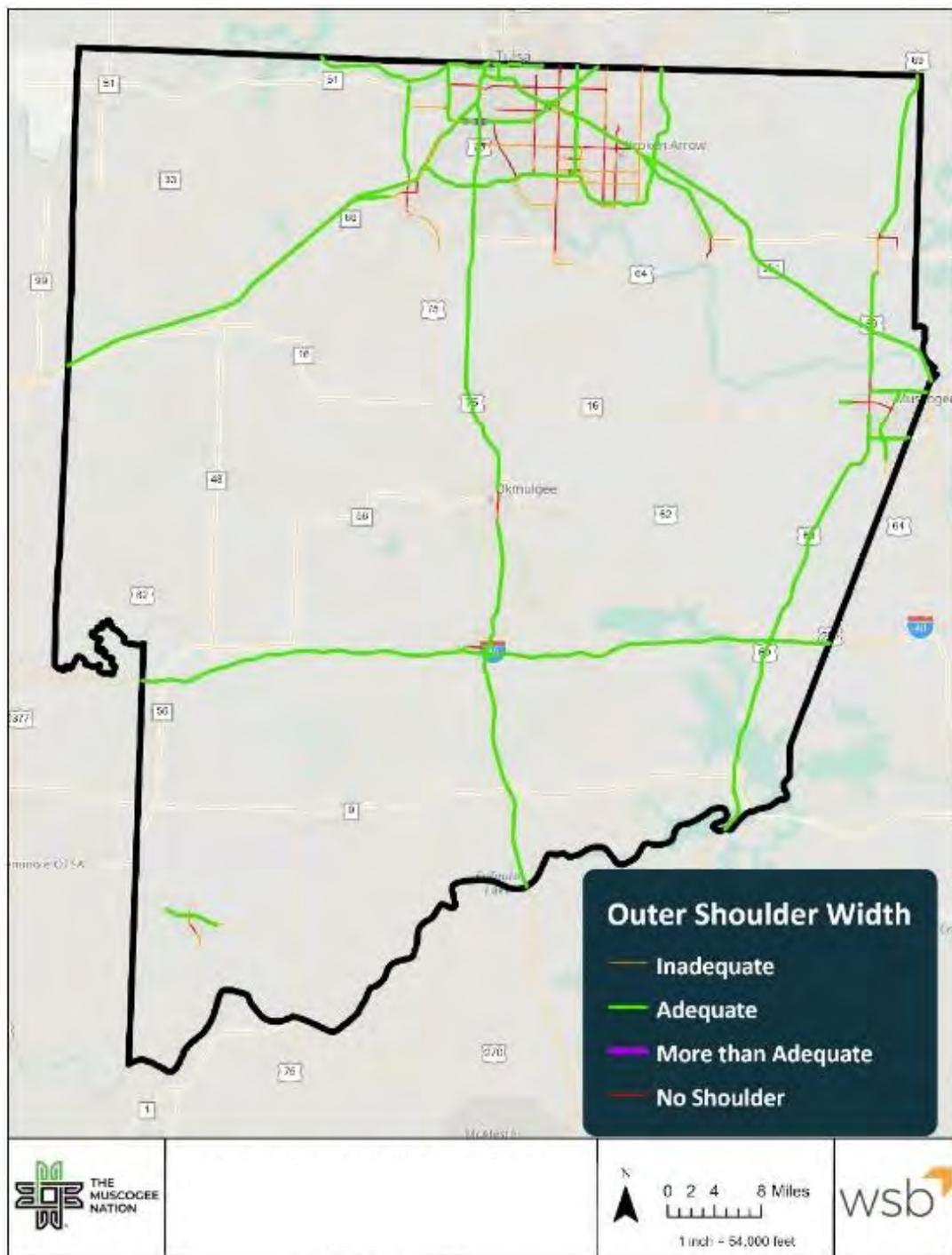


Figure 1: Interstate and Principal Arterial Roads Shoulder Width

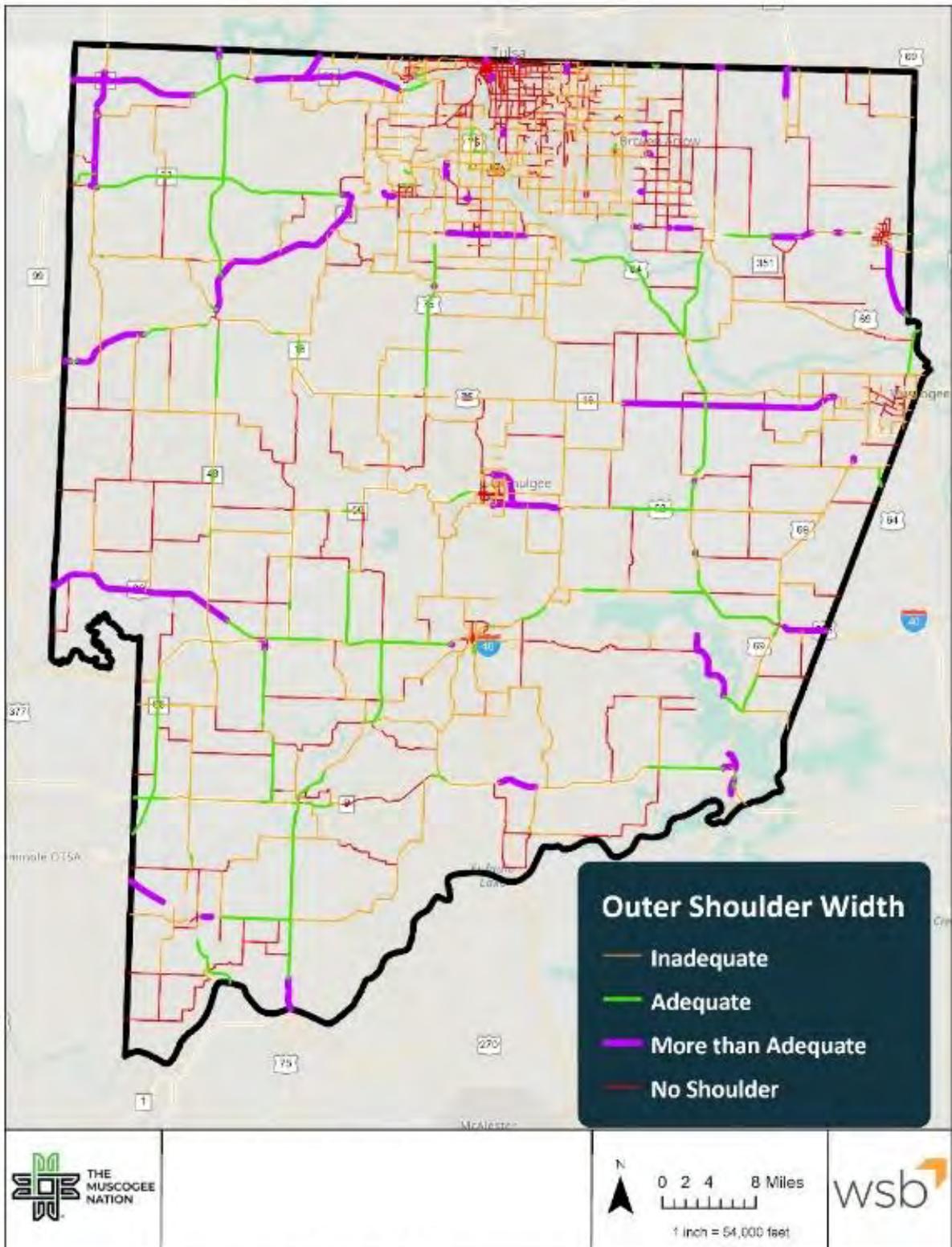


Figure 2: Secondary Arterial and Major Collector Roads Shoulder Width

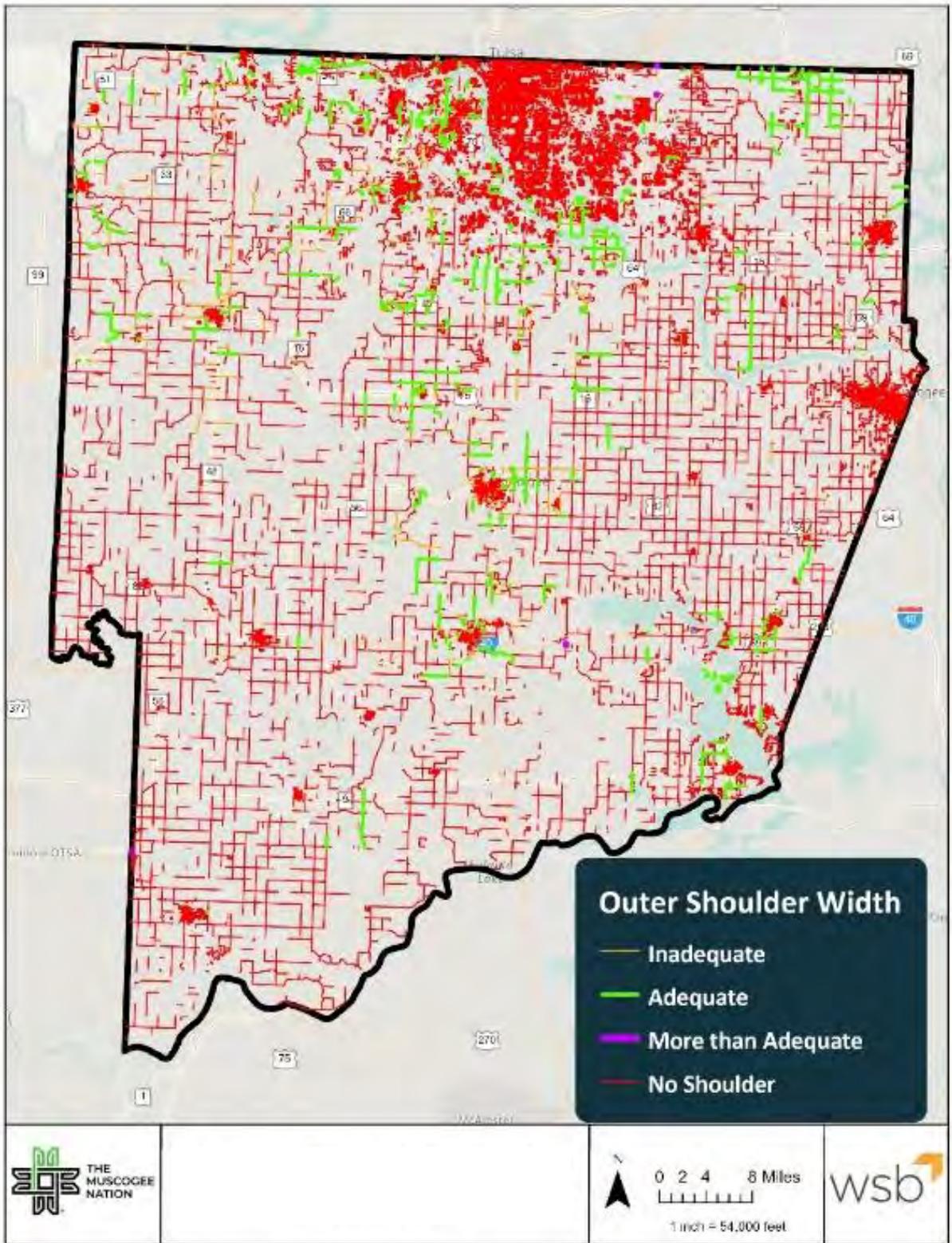


Figure 3: Secondary Collector and Local Roads Shoulder Width

APPENDIX B

SUPPLEMENTARY DATA ON THE SAFETY ANALYSIS

Appendix B
Supplementary Data on Safety Analysis

B.1 Data Filtering and Integration Process

The data used in this study consists of a 5-year historical crash dataset from January 1, 2017, to December 31, 2021. This data was requested and collected from the Oklahoma Department of Transportation (ODOT) Collision Data Request Portal on September 30th, 2024. The raw dataset contained **196,177 records**, each representing an individual involved in a crash, such as a driver, passenger, or pedestrian, rather than a unique crash event. After filtering, the dataset was narrowed down to 60,688 unique crashes. Incomplete data was addressed by removing 14 crashes that lacked severity information, and 5,837 crashes with incorrect or missing latitude or longitude values were also eliminated, leaving 54,837 crash records.

ODOT provides a valuable dataset for vehicle crashes; however, its coverage of pedestrian and bicycle crashes is limited, containing only 922 records involving pedestrians or cyclists. In contrast, the Oklahoma Highway Safety Office (OHSO) dataset reports a higher number of pedestrian and bicycle crashes, totaling 1,231, and includes additional details such as age, sex, injury type, and the conditions of both the driver and pedestrian. While ODOT categorizes pedestrian crashes as one of many crash types, OHSO reports them separately with more detailed attributes. A quality control process was conducted by overlaying ODOT data onto OHSO data, confirming that OHSO comprehensively covers the pedestrian and bicycle crash records found in ODOT, making the ODOT data redundant. To prevent double-counting, pedestrian and bicycle crashes were removed from the ODOT dataset, and the OHSO dataset from 2017 to 2021 was used for pedestrian crash analysis, while ODOT data was used for vehicle crash analysis.

After integrating the OHSO dataset and removing duplicate pedestrian and bicycle crashes from the ODOT dataset, the final dataset for analysis includes 53,915 unique vehicle crashes from ODOT and 1,231 pedestrian and bicycle crashes from OHSO, resulting in a total of **55,146 unique crashes** for analysis.

B.2 Crashes by Demographic Patterns, Area Type, and Region – Additional Information

B.2.1 Crashes by Demographic Patterns

Between 2017 and 2021, older drivers (age 65 and above) were involved in 9.83% of total crashes in the Muscogee Creek Nation and 10.56% of fatal crashes, indicating a slightly higher fatality rate relative to their overall crash involvement. Their crash numbers dropped significantly in 2020, likely due to reduced driving during COVID-19, but remained fairly consistent in other years. Teenage drivers accounted for a higher percentage of total crashes (11.44%) but a lower percentage of fatal crashes (6.37%), suggesting that while they are more frequently involved in crashes, these incidents tend to be less severe.

Table 1 provides a breakdown of total crashes and fatal crashes involving older and teenage drivers from 2017 to 2021, including the percentage of these crashes relative to the total crashes and fatal crashes across all years. **Error! Reference source not found.** shows the percentage of crashes involving male and female drivers from 2017 to 2021, relative to the total crashes and fatal crashes across all years.

Table 1 - Crash Involvement by Age Group (2017-2021) – Entire MCN

| Year | Older Drivers | | | | Teenage Drivers | | | |
|--------------|---|--------------------|---|--------------------------|---|--------------------|---|--------------------------|
| | Total Crashes | | Fatal Crashes | | Total Crashes | | Fatal Crashes | |
| | Number of Crashes involving Older Drivers | % of Total Crashes | Number of Crashes involving Older Drivers | % of Total Fatal Crashes | Number of Crashes Involving Teenage Drivers | % of Total Crashes | Number of Crashes Involving Teenage Drivers | % of Total Fatal Crashes |
| 2017 | 1364 | 9.78% | 8 | 9.64% | 1675 | 12.01% | 5 | 6.02% |
| 2018 | 1273 | 10.70% | 15 | 14.56% | 1378 | 11.58% | 9 | 8.74% |
| 2019 | 1135 | 10.20% | 9 | 9.57% | 1250 | 11.24% | 5 | 5.32% |
| 2020 | 789 | 9.08% | 10 | 9.90% | 1014 | 11.67% | 4 | 3.96% |
| 2021 | 861 | 9.07% | 11 | 9.09% | 989 | 10.42% | 9 | 7.44% |
| Total | 5422 | 9.83% | 53 | 10.56% | 6306 | 11.44% | 32 | 6.37% |

B.2.2 Crashes in Rural Vs. Urban Areas

The Muscogee Creek Nation consists mainly of rural areas, with limited urban sections. Since the characteristics and crash patterns of urban and rural areas differ, this section focuses on analyzing these variations within the crash data.

- Urban Areas: The urban areas (Tulsa City) comprise 45.57% of the population but cover only 2.88% of the total area within the Muscogee Creek Nation.
- Rural Areas: Rural areas encompass total population of 54.43% in the 97.12% of the total area.

Figure 1 compares the total number of crashes and the percentages of fatal, injury, and property damage-only crashes in urban and rural areas across the entire Muscogee Creek Nation, highlighting the differences in crash rates between these areas.

The fatality rate is notably higher in rural areas (1.32%) compared to urban areas (0.6%), suggesting that crashes in rural regions tend to be more severe, potentially due to higher speeds, longer emergency response times, and less frequent traffic law enforcement. On the other hand, the injury rate is higher in urban areas (43.59%) than in rural areas (40.32%), likely due to the higher volume of crashes in urban environments. Additionally, rural areas have a slightly higher property damage rate (58.36%) compared to urban areas (55.81%).

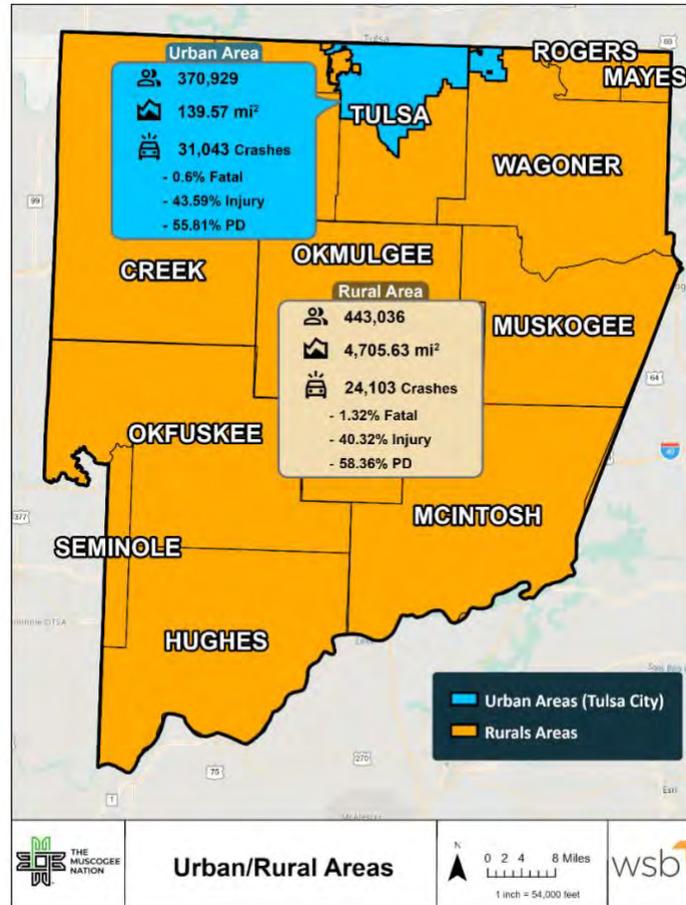


Figure 1: Urban/Rural Areas in Muskogee Creek Nation

B.2.3 Crashes by Region

For this analysis, the Muskogee Creek Nation was divided into four regions, and crash analysis was conducted to identify unique crash patterns for each region. **Figure 2** shows the different regions and displays the population and total area (mi²) for each region. The regions are as follows:

- Northeast Region: Parts of Rogers, Mayes, Wagoner, and Muskogee counties.
- Northwest Region: Creek County and portions of Tulsa County.
- Southeast Region: Okmulgee County and parts of McIntosh County.
- Southwest Region: Okfuskee County along with portions of Hughes and Seminole counties

Table 2 presents the total number of crashes, categorized by severity level, for each region. As shown in this table, the Northwest Region has the highest number of crashes across all severity levels, while the Southwest Region has the lowest which is consistent with their population and area with Northwest having the highest population and area and southwest the lowest.

The overall trend shows that while the severity distribution varies, the Southwest Region stands out for its higher fatal and incapacitating injury crashes among the total crashes in this region, while having a lower percentage of non-incapacitating and possible injuries. Property damage-only (PD) crashes also make up

a significant percentage of total crashes in the Southwest.

The Southeast Region shows a similar pattern to the Southwest, with higher rates of fatal and incapacitating injury crashes, but a relatively higher percentage of property damage-only crashes.

The Northeast and Northwest Regions have lower percentages of fatal and incapacitating injury crashes compared to the Southern regions, but higher percentages of non-incapacitating and possible injury crashes, and lower percentages of property damage-only crashes.

Crash types vary across different regions of the Muscogee Creek Nation, influenced by rural and urban characteristics. **Figure 3** illustrates the most common types of crashes in each region. Note that with the Northwest being the most urbanized and the Southwest the most rural, the types of crashes in these regions are different, as shown in this figure.

The Northern regions have the highest share of Rear-End and Angle-Turning crashes, indicating congestion, frequent stops, and high intersection density. In contrast, the Southern regions see a dominance of Fixed-Object crashes, suggesting higher-speed roads with limited roadside protection. Rollover and Animal-related crashes are notably higher in the Southern regions, pointing to rural conditions with more open land and wildlife activity. These trends suggest that urban areas need intersection and traffic flow improvements, while rural regions could benefit from better roadside barriers and wildlife mitigation strategies.

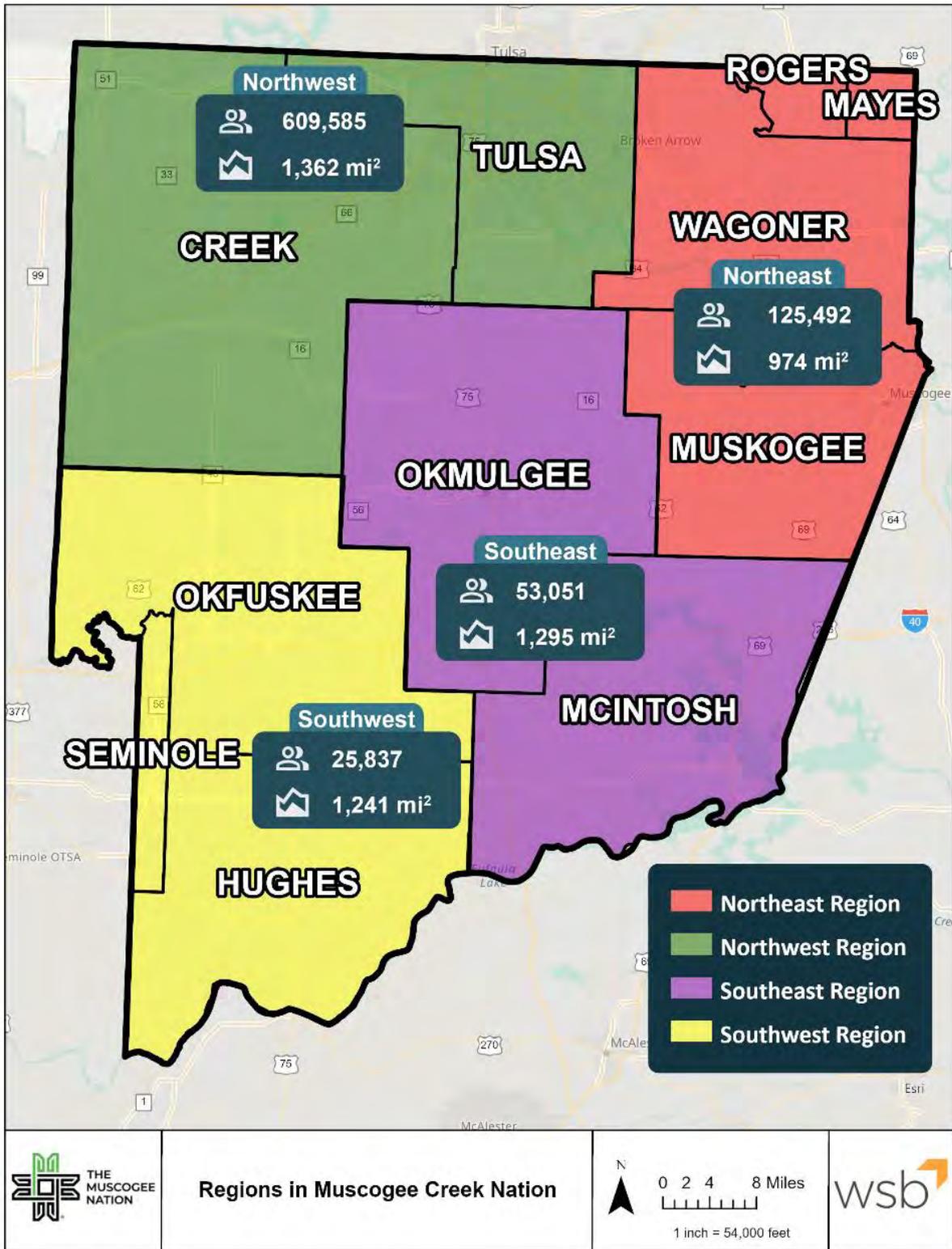


Figure 2 - Geographic Distribution of Muscogee Creek Nation Regions

Table 2 - Total Crashes by Severity for each Region

| Region | Severity Level | | | | |
|-----------|----------------|-----------------------|---------------------------|-----------------|-----------------|
| | Fatal | Incapacitating Injury | Non-Incapacitating Injury | Possible Injury | Property Damage |
| Northwest | 322 | 1,400 | 6,837 | 11,099 | 24,759 |
| | 1% | 3% | 15% | 25% | 56% |
| Northeast | 70 | 269 | 1,027 | 1,241 | 4,010 |
| | 1% | 4% | 16% | 19% | 61% |
| Southeast | 63 | 140 | 304 | 562 | 1,856 |
| | 2% | 5% | 10% | 19% | 63% |
| Southwest | 47 | 48 | 112 | 241 | 766 |
| | 4% | 4% | 9% | 20% | 63% |

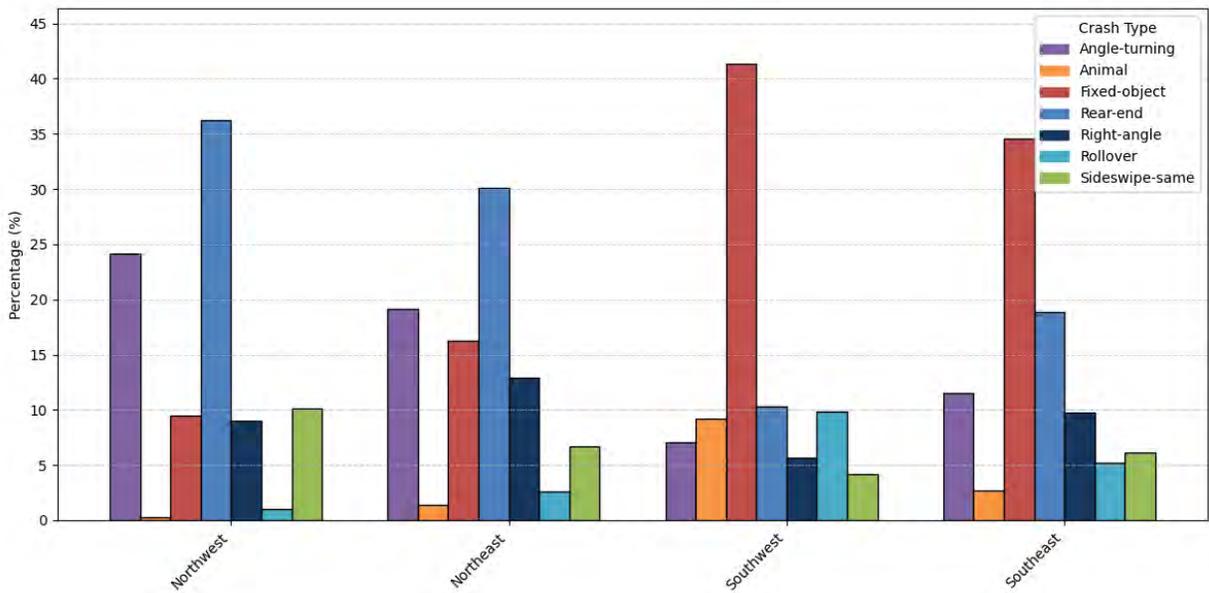


Figure 3 - Distribution of Common Crash Types Across Muscogee Creek Nation Regions

B.3 County Level Crash Analysis

B.3.1 Crash Rates Normalized by Population

To account for population density and prevent bias from counties that rank higher solely due to their population size, the total and fatal crashes were normalized by population as well. **Table 3** presents the number of total and fatal crashes per 100,000 individuals, ordered from the highest to the lowest total crashes per 100,000 individuals. According to this table:

- Muskogee County has the highest total crash rate (7,625.87 per 100,000 individuals), closely followed by Tulsa County (7,563.56), despite Tulsa having a significantly larger total number of crashes (40,675 vs. 3,373).
- Okfuskee County has the highest fatal crash rate (254.14 per 100,000 individuals), highlighting a disproportionately high number of fatal crashes relative to its population, despite having a relatively small total crash count (787).
- McIntosh County also shows a high fatal crash rate (180.98), suggesting that crashes in this county tend to be more severe.
- Hughes County experiences a notable fatal crash rate (127.40), despite having a relatively small total crash count (293), indicating a high proportion of fatal crashes.
- Rogers County has the lowest crash rates overall, with just 1 fatal crash and a fatal crash rate of 23.71 per 100,000 individuals, making it the safest county in terms of fatal crashes.

B.3.2 Crash Rates Normalized by Area

Similar to the normalization by population, the data has been normalized by area to account for the impact of larger geographic regions. **Table 3** presents the number of total and fatal crashes per unit area, ordered from the highest to the lowest total crashes per unit area. According to this table:

- Tulsa County, the most urban county in Muscogee Creek Nation, has the highest total crash rate (103.06 crashes per unit area) and fatal crash rate (0.64 per unit area), reflecting a significant concentration of crashes due to higher traffic volumes and urban road conditions.
- Muskogee County has a much lower crash density, with a total crash rate of 8.88 per unit area and a fatal crash rate of 0.06 per unit area, indicating crashes are more spread out across the county.
- Wagoner County and Creek County show similar trends, with moderate total crash rates (6.07 and 3.87 per unit area, respectively). Both have relatively low fatal crash rates per unit area.
- Mayes County stands out with the highest fatal crash rate per unit area (0.09), despite having a lower total number of crashes. This suggests a higher concentration of severe crashes in the county.
- Smaller counties like Seminole, Rogers, and Okfuskee have the lowest crash densities, with Rogers County having the lowest rates for both total (1.38) and fatal crashes (0.02), indicating relatively few concentrated crash occurrences.

Table 3 - Normalized Total and Fatal Crashes per Unit Area by County

| County | Fatal Crashes | Total Crashes | Area (mile ²) | Total Crash Per Unit Area | Fatal Crash Per Unit Area |
|----------|---------------|---------------|---------------------------|---------------------------|---------------------------|
| Tulsa | 254 | 40,675 | 394.66 | 103.06 | 0.64 |
| Muskogee | 23 | 3,373 | 379.97 | 8.88 | 0.06 |
| Wagoner | 43 | 3,094 | 510.05 | 6.07 | 0.08 |
| Creek | 68 | 3,742 | 967.81 | 3.87 | 0.07 |
| Okmulgee | 34 | 1,758 | 701.89 | 2.5 | 0.05 |
| Mayes | 3 | 83 | 35.03 | 2.37 | 0.09 |
| McIntosh | 29 | 1,167 | 593.44 | 1.97 | 0.05 |
| Seminole | 4 | 107 | 68.02 | 1.57 | 0.06 |
| Rogers | 1 | 67 | 48.69 | 1.38 | 0.02 |
| Okfuskee | 29 | 787 | 626.64 | 1.26 | 0.05 |
| Hughes | 14 | 293 | 545.92 | 0.54 | 0.03 |

B.3.3 Contributing Crash Causes Across Counties

Different counties within the Muscogee Creek Nation experience varying contributing factors to crashes, with some factors being more prevalent than others in certain counties. **Figure 4** provides an overview of the key contributing crash causes across counties within the Muscogee Creek Nation.

Poor lighting is the leading crash cause in several counties, especially Rogers and Mayes. Speeding is a major factor in Okfuskee and Mayes, suggesting high-speed roadways and enforcement issues. Failure to yield is prevalent in Tulsa and Muskogee, pointing to intersection-related crashes due to unclear right-of-way or poor signage. Alcohol or drug involvement is significant in Rogers, Mayes, and Seminole, emphasizing the need for stronger DUI enforcement. Poor weather contributes notably to crashes in Okfuskee and Mayes, likely due to road conditions or driver inexperience. Urban areas like Tulsa and

Muskogee see more intersection-related crashes, while rural counties face higher risks from speed and poor lighting, highlighting the need for targeted safety improvements.

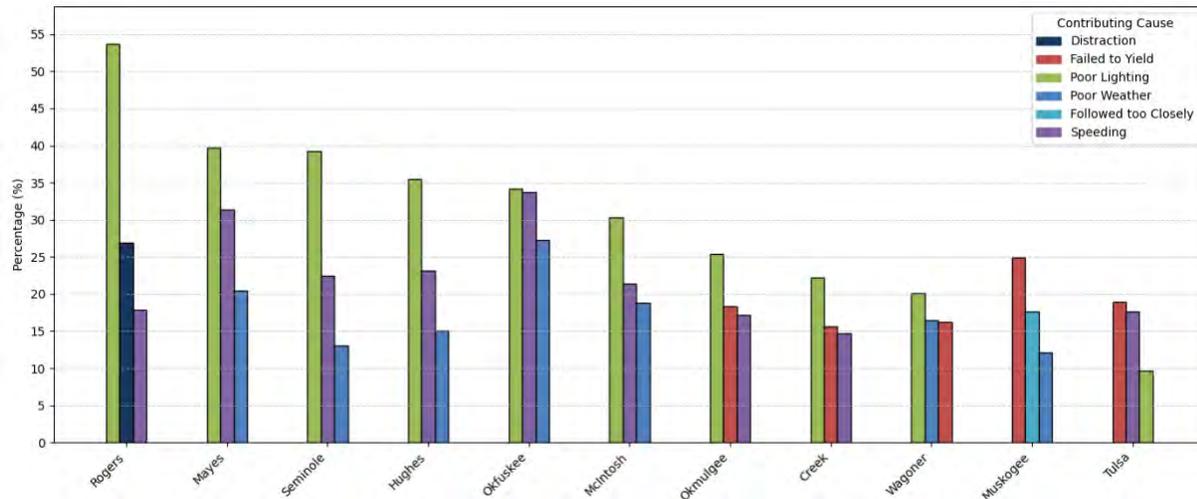


Figure 4: Top Three Contributing Crash Factors by County

Failed to Yield-Related Crashes:

Failed-To-Yield continues to be one of the most significant contributing factors among all crashes. Muskogee (27.42%) and Tulsa (20.4%) counties have the highest percentages of total crashes related to this issue. In fatal crashes, Muskogee (17.39%) and McIntosh (10.34%) report some of the highest rates, underscoring the severity of this violation. In contrast, counties like Okfuskee, Seminole, and Rogers reported no fatal crashes attributed to this factor. Despite lower percentages of total crashes in certain areas, the higher fatality rates in other counties emphasize the dangerous consequences of failing to yield.

Speed-Related Crashes:

Speeding remains the second most common contributing factor in crashes, with Okfuskee (35.07%) and Mayes (31.33%) having the highest percentage of total crashes related to unsafe speed. Fatal crashes due to speeding are particularly severe in Mayes (33.33%) and McIntosh (37.93%) counties, highlighting the deadly impact of this factor. Tulsa, despite having the highest number of speeding-related crashes (7,454), has a relatively lower fatal crash percentage (23.62%), likely due to the more controlled urban road conditions. In contrast, rural counties like Hughes (21.43%) and Okmulgee (32.35%) experience higher fatality rates, emphasizing the dangers of speeding in less controlled environments.

Poor Lighting-Related Crashes:

Rogers County has the highest proportion of poor lighting-related crashes (53.73%), though this is due to a single fatal crash making up 100% of its fatal crashes. Okfuskee (34.18%) and Mayes (39.76%) also exhibit high rates, with Okmulgee showing the highest fatal crash proportion (50%). Tulsa, despite having the most total crashes, has a relatively low rate (9.68%), indicating better lighting conditions or other mitigating factors.

Poor Weather-Related Crashes:

Okfuskee County has the highest proportion of poor weather-related crashes (27.32%), although its fatal

crash rate from this factor remains low (6.90%). McIntosh (18.85%) and Mayes (20.48%) also report relatively high weather-related crash rates, but no fatal crashes were attributed to poor weather in Mayes. Wagoner has a notable number of poor weather crashes (16.48%) but no fatalities, while Tulsa, despite having the highest total number of crashes, has a lower poor weather crash rate (9.31%), likely due to better infrastructure or road maintenance.

Distraction-Related Crashes:

Rogers County has the highest proportion of distraction-related crashes (26.87%), though none of these were fatal. Wagoner (16.26%) and Okmulgee (14.22%) counties also report high rates, with Wagoner County recording four fatal crashes. Tulsa County, despite having the most total crashes, has a relatively low distraction-related crash rate (10.18%), possibly due to better enforcement or infrastructure. Seminole County stands out with a high fatal distraction-related crash rate (25.00%), despite having a lower total crash count.

Followed Too Closely Related Crashes:

Muskogee County has the highest proportion of crashes related to following too closely (19.63%), though none were fatal. Tulsa County follows with 10.35% of its crashes attributed to this factor, but again, no fatalities were reported. Creek County is the only one with a fatal crash from following too closely, though its overall percentage remains low (9.17%). Rogers County recorded no such crashes, while Hughes County had the highest fatal crash rate (7.14%) relative to its total crashes from this factor.

Change Lanes Unsafely Related Crashes:

Tulsa County has the highest percentage of crashes related to unsafe lane changes (8.16%), but fatalities from this factor are rare, with only three fatal crashes recorded. Creek, Wagoner, and Muskogee counties also have moderate shares of such crashes (4–6%), though none resulted in fatalities. Okfuskee County is the only other county with a fatal crash due to unsafe lane changes (3.45% of its fatal crashes). Overall, fatalities from this factor are minimal across all counties, suggesting that while lane-changing errors contribute to crashes, they rarely result in severe outcomes.

Failed to Stop-Related Crashes:

Tulsa County has the highest percentage of crashes related to failure to stop (7.03%), with nine fatalities attributed to this factor. Muskogee and Wagoner Counties also have notable shares of such crashes (6.79% and 6.33%, respectively), but none resulted in fatalities. Creek County recorded two fatal crashes due to failure to stop, making up 2.94% of its fatal crashes. In contrast, Mayes and Seminole Counties had no reported crashes from this cause. Overall, fatalities due to failure to stop remain relatively low across the study area.

Alcohol/Drug Intoxication-Related Crashes:

Fatal crashes due to alcohol or drug intoxication are notably high, with several counties showing a significant proportion of fatal crashes linked to substance use. Rogers County reports 100% of its fatal crashes as alcohol- or drug-related; however, this is based on only one fatal crash. Seminole (75%), Mayes (66.67%), and Okmulgee (35.29%) counties also show alarmingly high shares. Even in counties with a lower percentage, such as Tulsa (14.57%) and Muskogee (17.39%) counties, the sheer number of substance-related crashes remains substantial. This indicates that while alcohol- and drug-related crashes are widespread, their fatality rates are disproportionately higher in rural counties.

B.3.4 Impact of Protective Devices on Fatalities Across different Counties:

As shown in this table, Rogers County has the highest unrestrained fatality rate at 100%, but this is based on a single fatality. Counties such as Hughes (64.3%), Okfuskee (62.1%), and McIntosh (61.3%) also have high unrestrained fatality rates, indicating a strong correlation between the lack of protective device usage and severe crashes. Tulsa County, despite having the highest total fatalities, has a lower unrestrained fatality rate (45.1%), suggesting better seatbelt usage in urban areas. This data emphasizes the need for increased enforcement and education on seatbelt use, particularly in counties with higher unrestrained fatality rates.

Table 4 presents the number of unrestrained fatalities, total fatalities, and the unrestrained fatality rate for each county within the Muscogee Creek Nation. The unrestrained fatality rate is calculated by dividing unrestrained fatalities by total fatalities.

As shown in this table, Rogers County has the highest unrestrained fatality rate at 100%, but this is based on a single fatality. Counties such as Hughes (64.3%), Okfuskee (62.1%), and McIntosh (61.3%) also have high unrestrained fatality rates, indicating a strong correlation between the lack of protective device usage and severe crashes. Tulsa County, despite having the highest total fatalities, has a lower unrestrained fatality rate (45.1%), suggesting better seatbelt usage in urban areas. This data emphasizes the need for increased enforcement and education on seatbelt use, particularly in counties with higher unrestrained fatality rates.

Table 4 - Unrestrained Fatalities and Fatality Rates by County

| County | Unrestrained Fatalities | All Fatalities | Unrestrained Fatality Rate |
|----------|-------------------------|----------------|----------------------------|
| Rogers | 1 | 1 | 100.0% |
| Hughes | 9 | 14 | 64.3% |
| Okfuskee | 18 | 29 | 62.1% |
| McIntosh | 19 | 31 | 61.3% |
| Wagoner | 26 | 45 | 57.8% |
| Okmulgee | 19 | 33 | 57.6% |
| Muskogee | 11 | 20 | 55.0% |
| Seminole | 2 | 4 | 50.0% |

| | | | |
|-------|----|-----|-------|
| Tulsa | 88 | 195 | 45.1% |
| Creek | 30 | 68 | 44.1% |
| Mayes | 1 | 3 | 33.3% |

B.4 Regional and County-Level Pedestrian and Bicycle Crash Data

B.4.1 Pedestrian and Bicycle Crashes by Region

Table 5 and **Table 6** present the number of pedestrian and bicycle crashes, respectively, categorized by region and severity level from 2017 to 2021.

Table 5: Pedestrian Crashes Severity Level per Region (2017-2021)

| Region | Severity Level (Number) | | | | | Total |
|--------------|-------------------------|-----------------------|---------------------------|-----------------|-----------------|------------|
| | Fatal | Incapacitating Injury | Non-Incapacitating Injury | Possible Injury | Property Damage | |
| Northwest | 78 | 152 | 248 | 156 | 90 | 724 |
| Southeast | 8 | 13 | 19 | 22 | 9 | 71 |
| Northeast | 3 | 8 | 5 | 9 | 2 | 27 |
| Southwest | 4 | 1 | 3 | 3 | 1 | 12 |
| Total | 93 | 174 | 275 | 190 | 102 | 834 |

Table 6: Bike Crashes Severity Level per Region (2017-2021)

| Region | Severity Level (Number) | | | | | Total |
|--------------|-------------------------|-----------------------|---------------------------|-----------------|-----------------|------------|
| | Fatal | Incapacitating Injury | Non-Incapacitating Injury | Possible Injury | Property Damage | |
| Northwest | 10 | 51 | 123 | 99 | 55 | 338 |
| Southeast | 0 | 8 | 17 | 13 | 9 | 47 |
| Northeast | 2 | 0 | 0 | 6 | 2 | 10 |
| Southwest | 2 | 0 | 0 | 0 | 0 | 2 |
| Total | 14 | 59 | 140 | 118 | 66 | 397 |

The Northwest Region, home to Tulsa, the largest and most urbanized city within the Nation, reports the highest number of both pedestrian and bicycle crashes across all severity levels. This is consistent with the region's high population density, greater traffic volumes, and increased pedestrian and cyclist activity.

The Southeast Region, which includes Muskogee County, another significant urban center, follows with the second-highest crash counts—especially notable in bicycle incidents. Meanwhile, the Northeast and Southwest Regions show substantially lower crash numbers, reflecting their more rural nature and lower non-motorized traffic exposure.

B.4.2 Pedestrian and Bicycle Crashes by County

Table 7 and

Table 8 show pedestrian and bicycle crash data, respectively, broken down by county and severity level for the years 2017–2021.

Table 7: Pedestrian Crashes Severity Level per County (2017-2021)

| County | Pedestrian Crashes Severity Level (Number) | | | | | |
|----------|--|-----------------------|---------------------------|-----------------|-----------------|------------|
| | Fatal | Incapacitating Injury | Non-Incapacitating Injury | Possible Injury | Property Damage | Total |
| Tulsa | 70 | 147 | 235 | 147 | 89 | 688 |
| Muskogee | 5 | 9 | 14 | 16 | 6 | 50 |
| Creek | 8 | 5 | 13 | 9 | 1 | 36 |
| Wagoner | 3 | 4 | 5 | 6 | 3 | 21 |
| Okmulgee | 2 | 6 | 2 | 7 | 2 | 19 |
| Okfuskee | 4 | 0 | 2 | 3 | 0 | 9 |
| McIntosh | 1 | 2 | 3 | 2 | 0 | 8 |
| Hughes | 0 | 1 | 0 | 0 | 1 | 2 |
| Seminole | 0 | 0 | 1 | 0 | 0 | 1 |
| Rogers | 0 | 0 | 0 | 0 | 0 | 0 |
| Mayes | 0 | 0 | 0 | 0 | 0 | 0 |

| | | | | | | |
|--------------|-----------|------------|------------|------------|------------|------------|
| Total | 93 | 174 | 275 | 190 | 102 | 834 |
|--------------|-----------|------------|------------|------------|------------|------------|

Table 8: Bike Crashes Severity Level per County (2017-2021)

| County | Pedestrian Crashes Severity Level (#) | | | | | |
|-----------------|---------------------------------------|-----------------------|---------------------------|-----------------|-----------------|------------|
| | Fatal | Incapacitating Injury | Non-Incapacitating Injury | Possible Injury | Property Damage | Total |
| Tulsa | 10 | 46 | 116 | 94 | 53 | 319 |
| Muskogee | 0 | 6 | 13 | 10 | 6 | 35 |
| Creek | 0 | 5 | 7 | 5 | 2 | 19 |
| Wagoner | 0 | 2 | 4 | 3 | 3 | 12 |
| Okmulgee | 2 | 0 | 0 | 3 | 2 | 7 |
| McIntosh | 0 | 0 | 0 | 3 | 0 | 3 |
| Hughes | 1 | 0 | 0 | 0 | 0 | 1 |
| Okfuskee | 1 | 0 | 0 | 0 | 0 | 1 |
| Rogers | 0 | 0 | 0 | 0 | 0 | 0 |
| Mayes | 0 | 0 | 0 | 0 | 0 | 0 |
| Seminole | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 14 | 59 | 140 | 118 | 66 | 397 |

- **Tulsa County**—home to the city of Tulsa, the most populous and urbanized area within the Muskogee Creek Nation—accounts for the vast majority of **pedestrian (688)** and **bicycle (319)** crashes.
- **Muskogee County**, which includes the city of Muskogee, reports **the second-highest** number of

crashes, reflecting similar urban characteristics. Counties such as Creek, Wagoner, and Okmulgee report moderate crash totals. In contrast, more rural counties like Rogers, Mayes, and Seminole report few or no incidents, likely due to lower population density and reduced pedestrian and bicycle activity.

APPENDIX C

HIGH INJURY NETWORK DEVELOPMENT METHODOLOGY

Technical Memorandum

High Injury Network Development Methodology

To: Shelby Deere

From: Antony Atencio

Date: 03/11/2025

Re: Safe Street for All - Muscogee Creek Nation



Introduction

This memorandum outlines the methodology used to develop High Injury Networks (HIN) for the Muscogee Creek Nation SS4A Safety Action Plan. A HIN identifies roads, streets, or corridors within a specific area that experience a disproportionate number of traffic fatal and serious injury crashes based on crash data analysis.

Methodology

- **Crash Severity:**

The development of the HIN involved reviewing crash data, focusing on three (3) of the five (5) crash severity levels—**fatal, incapacitating injury, and non-incapacitating injury** crashes— and excluding possible injury and property damage-only crashes from the analysis.

- **Roadway Segments and Intersections**

Within the MCN roadway network, only roadway segments and intersections with fatality, incapacitating injury, or non-incapacitating injury crashes were selected for inclusion in the HIN determination.

- **Calculate the Crash Rate for each Roadway Segment and Intersection:**

The crash rate is a measure of how frequent crashes occur within a specific area, time period, or roadway segment, typically normalized by traffic volume, length, or population to assess roadway safety. When calculating crash rates, crashes are weighted according to their severity, using direct conversion crash unit cost coefficients sourced from the Federal Highway Administration (**Table 1**). In this table, rows K to O represent the costs associated with different crash severity levels as follows:

- K: Fatal
- A: Incapacitating Injury
- B: Non- Incapacitating Injury
- C: Possible Injury
- O: Property Damage Only

In developing the HIN for Muscogee Creek Nation (MCN), various methods were evaluated to ensure the crash rate accurately reflects crash severity and density across the roadway network. This evaluation considered multiple approaches, both with and without the inclusion of Annual Average Daily Traffic (AADT) and road segment lengths. Normalizing the crash rate based on AADT was determined to be the most

effective approach for developing the HIN crash rate. The formula for the crash rate used in the development of HIN is as follows:

$$\text{Crash Rate} = \frac{\sum(C_s \times N_s) \times 100,000,000}{365 \times Y \times \text{AADT} \times \sum C_s} \text{ (Crashes per 100 million vehicle-miles)}$$

Cs = Cost assigned to each crash severity level (KABCO Crash Unit Costs - 2016 Dollars)

Ns = Number of crashes at each severity level (Crashes)

Y = Study period in years (5)

AADT = Average Annual Daily Traffic (Vehicles/day)

Table 1 - KABCO Crash Unit Costs (2016 Dollars)

| KABCO | Crash Unit Cost (\$) |
|-------|----------------------|
| K | 9,600,000 |
| A | 2,553,600 |
| B | 451,200 |
| C | 28,800 |
| O | 4,200 |

- **Tier 1 Classification: Classification Based on AADT**

For the purposes of this study, AADT is defined as follows:

- **AADT for Roadway Segments:**
The raw AADT data sourced from the ODOT roadway network which is an estimate of the average number of vehicles that pass a specific roadway segment each day over the course of a year.
- **AADT for Intersections:**
The AADT for an intersection is calculated as the sum of the AADT values of all the roadway approaches that intersect at that location.

To better account for the impact of AADT, locations (roadway segments and intersections) with AADT below the identified 25th percentile threshold of the AADT distribution were adjusted to their threshold values:

- Threshold for roadway segments: AADT=930
- Threshold for intersections: AADT=600

This adjustment prevents disproportionately influencing the results by locations with very low AADT.

The AADT for roadway segments in Muscogee Creek Nation that have experienced at least one crash within the top three severity levels (fatal, incapacitating injury, and non-incapacitating injury) ranges from 930 to 122,000, with a skewed distribution, as shown in **Figure 1**. For intersections with at least one crash of these severity levels, the AADT distribution ranges from 600 to 60,500, as illustrated in **Figure 2**. Normalizing based on these ranges leads to significant disparities in crash rates across segments and intersections with different traffic volumes. Therefore, both roadway segments and intersections were categorized into Low, Medium, and High AADT using the Jenks Natural Breaks algorithm (Reference: Jenks, G. F. (1967). "The Data Model Concept in Statistical Mapping," International Yearbook of Cartography, 7, 186–190).

The AADT thresholds for roadway segments are as follows:

- Low AADT: Less than 12,700
- Medium AADT: Between 12,700 and 48,400
- High AADT: Greater than 48,400

The AADT thresholds for intersections are as follows:

- Low AADT: Less than 9,900
- Medium AADT: Between 9,900 and 25,650
- High AADT: Greater than 25,650

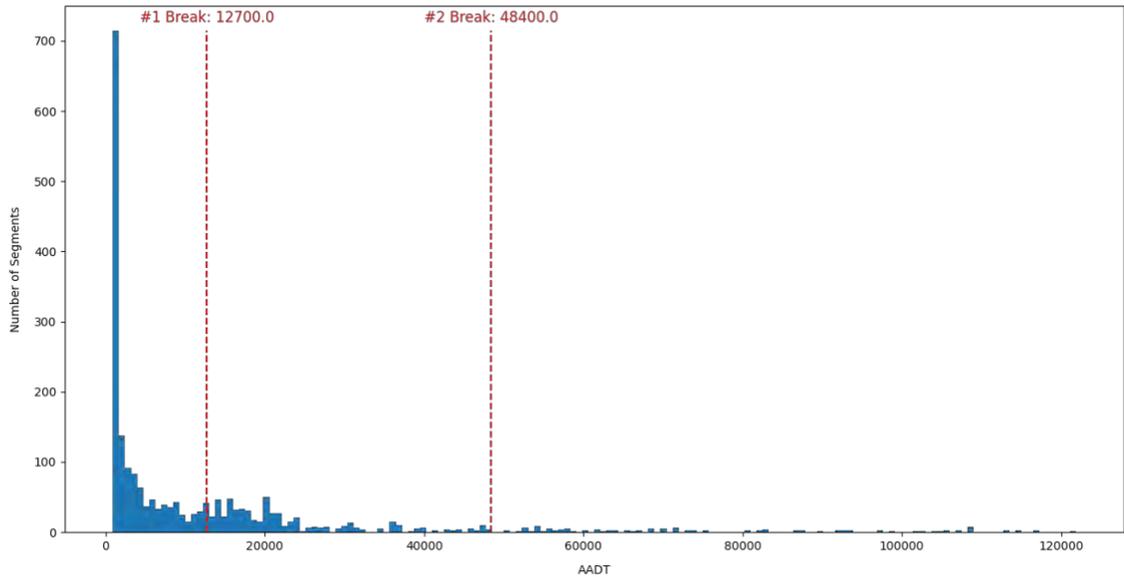


Figure 1 - Distribution of Roadway Segments by AADT

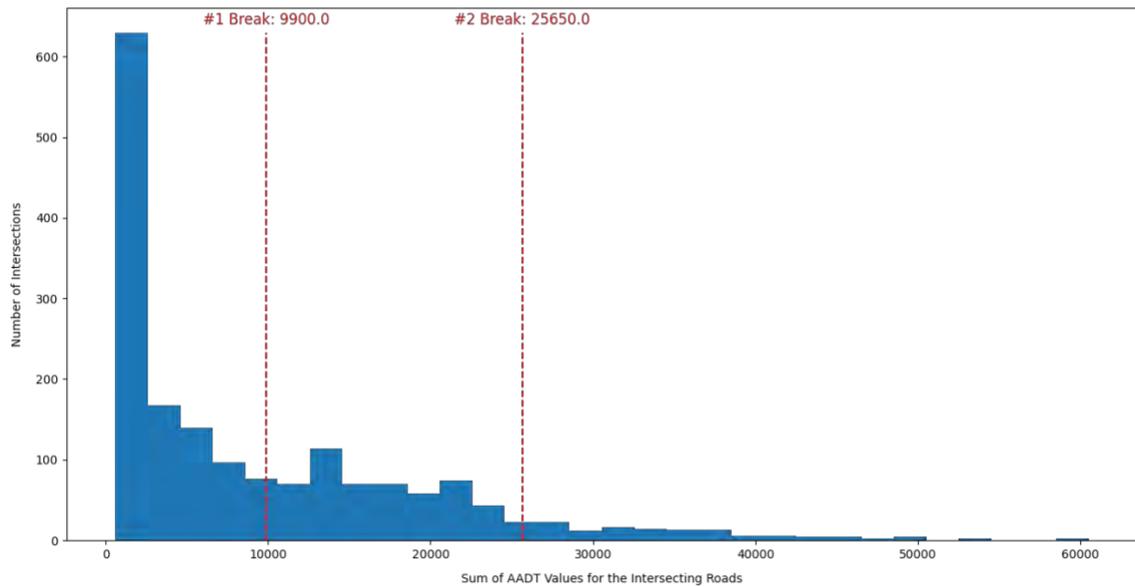


Figure 2 - Distribution of Intersections by AADT

- **Tier 2 Classification: Roadway Classification Based on Crash Rate**

Separate injury network maps were created for each AADT category for both roadway segments and intersections based on calculated crash rates. To classify crash rates into three groups within each AADT category, the crash rate distribution was analyzed as shown in **Figure 3**, **Figure 4** and **Figure 5** for roadway segments and **Figure 6**, **Figure 7** and **Figure 8** for intersections. The following thresholds were selected to best represent different crash rate categories:

- Low Crash Rate: Roadway segments with a crash rate below the 50th percentile (median) threshold.
- Medium Crash Rate: Roadway segments with a crash rate between the median and the 90th percentile.
- High Crash Rate: Roadway Segments with a crash rate above the 90th percentile (top 10%) threshold.

Table 2 shows the distribution of roadway segments across different AADT and crash rate categories, along with the corresponding crash rate ranges and the total mileage of segments within each category. **Table 3** presents the same information for intersections, replacing segment mileage with the number of intersections.

Figure 9, Figure 10 and **Figure 11** show the Injury Network maps for roadway segments across different AADT categories. **Figure 12, Figure 13** and **Figure 14** display the corresponding Injury Network maps for intersections:

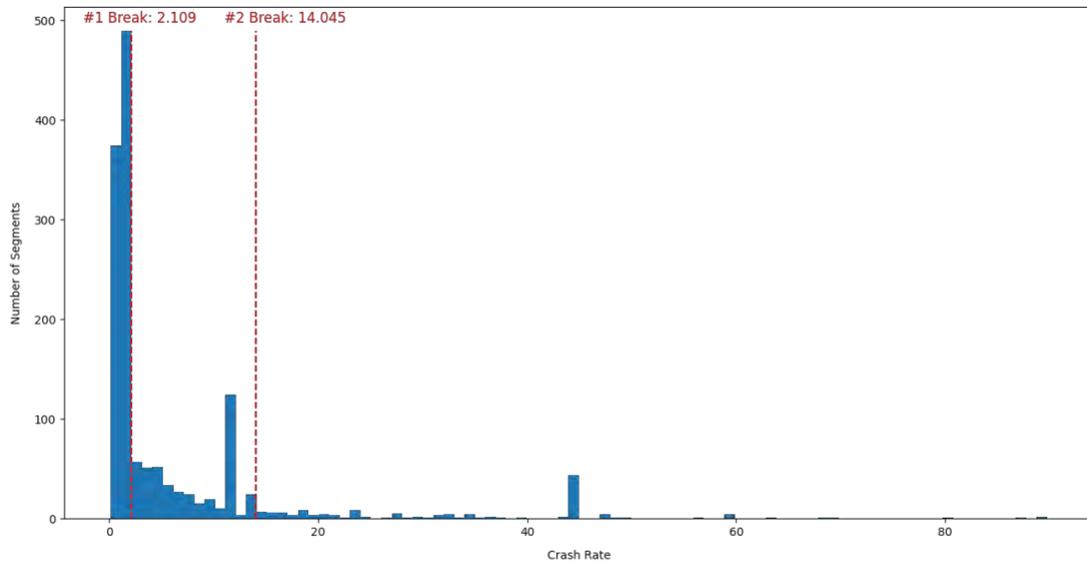


Figure 3 - Roadway Segment Crash Rate Distribution (Low AADT Category)

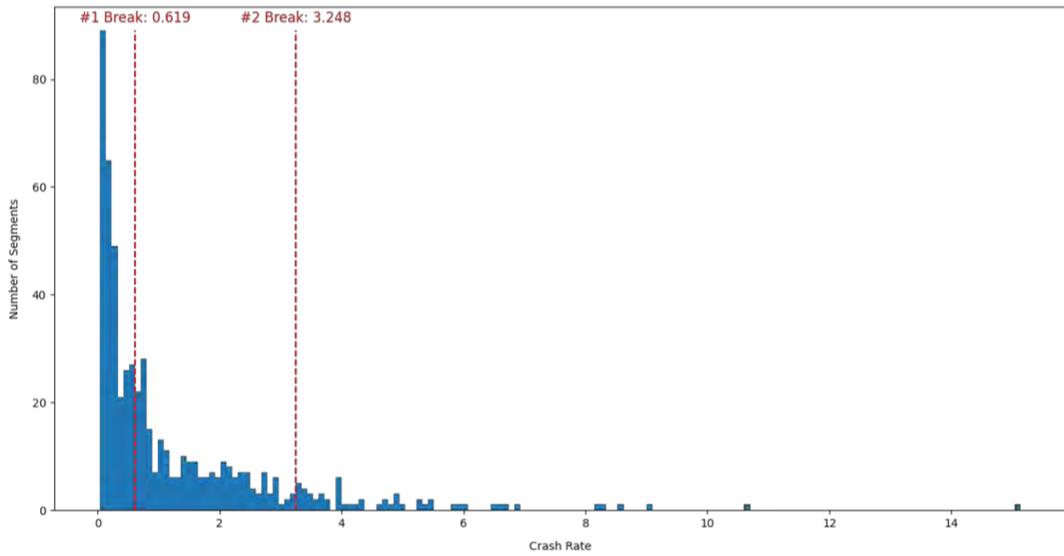


Figure 4 - Roadway Segment Crash Rate Distribution (Medium AADT Category)

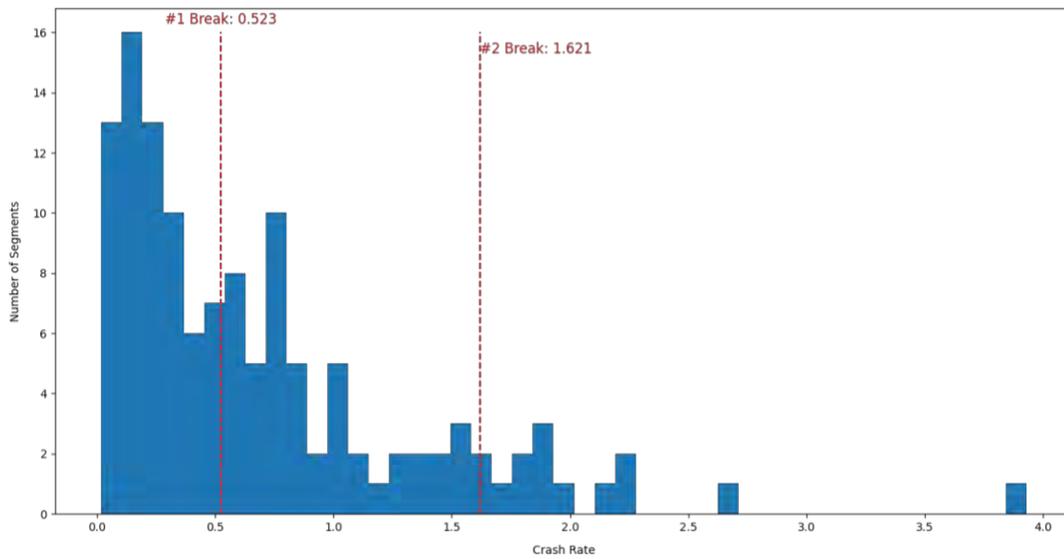


Figure 5 - Roadway Segment Crash Rate Distribution (High AADT Category)

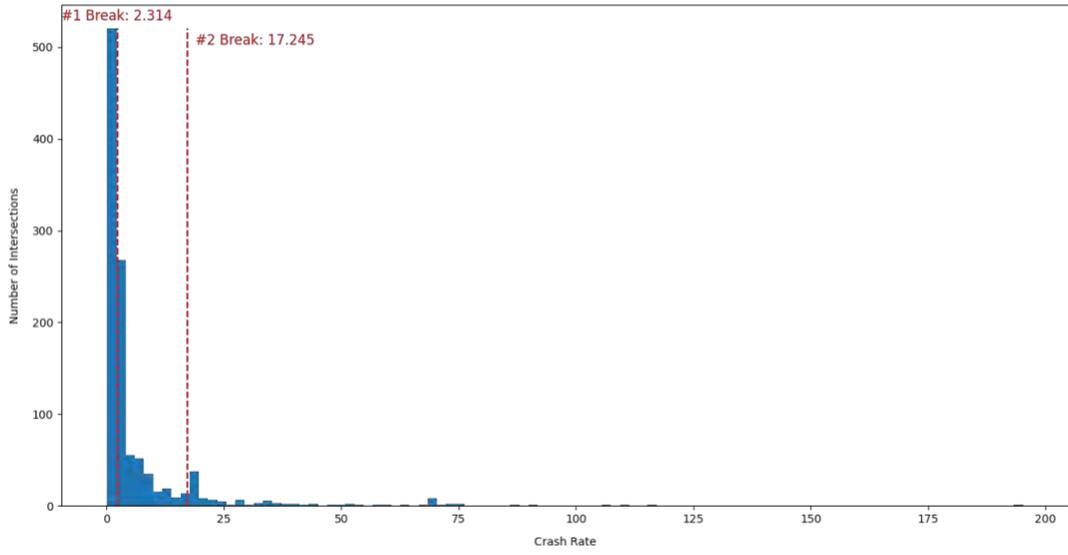


Figure 6 - Intersection Crash Rate Distribution (Low AADT Category)

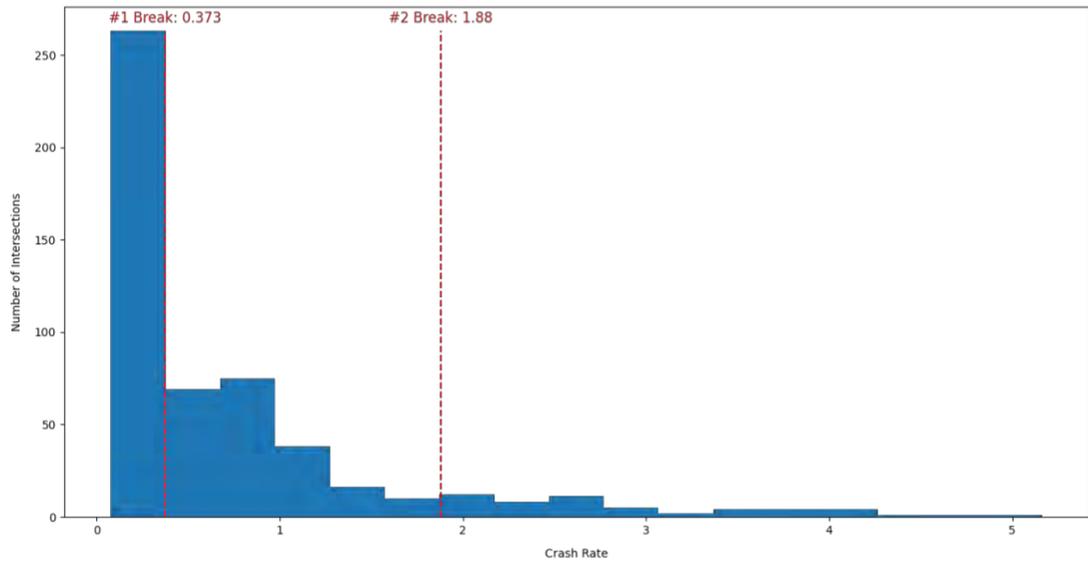


Figure 7 - Intersection Crash Rate Distribution (Medium AADT Category)

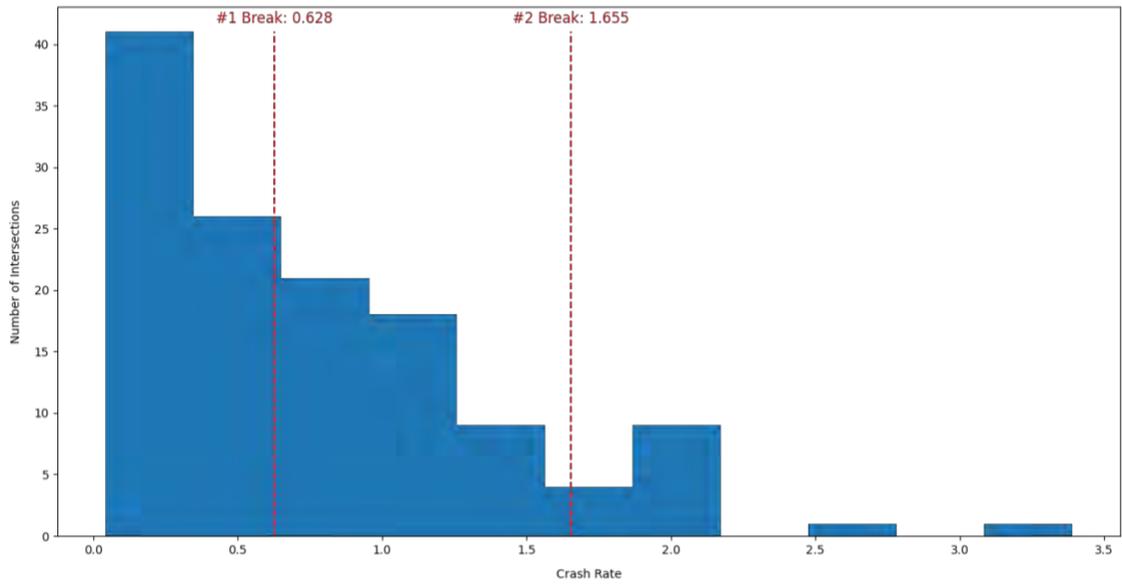


Figure 8 - Intersection Crash Rate Distribution (High AADT Category)

Table 2 - Distribution of Roadway Segments by AADT and Crash Rate Categories

| AADT Category | AADT Range | Crash Rate Category | Crash Rate Range | Roadway Miles |
|---------------|------------------|---------------------|------------------|---------------|
| Low | 930 - 12,700 | Low | 0.16 - 2.11 | 561 |
| | | Medium | 2.11 - 14.04 | 441 |
| | | High | 14.04 - 89.75 | 217 |
| Medium | 12,700 - 48,400 | Low | 0.04 - 0.62 | 139 |
| | | Medium | 0.62 - 3.25 | 172 |
| | | High | 3.25 - 15.13 | 76 |
| High | 48,400 - 122,000 | Low | 0.02 - 0.52 | 23 |
| | | Medium | 0.52 - 1.62 | 23 |
| | | High | 1.62 - 3.93 | 9 |

Table 3 - Distribution of Intersections by AADT and Crash Rate Categories

| AADT Category | AADT Range | Crash Rate Category | Crash Rate Range | Number of Intersections |
|---------------|-----------------|---------------------|------------------|-------------------------|
| Low | 600 - 9,900 | Low | 0.2 - 2.31 | 547 |
| | | Medium | 2.31 - 17.24 | 431 |
| | | High | 17.24 - 195.21 | 110 |
| Medium | 9,900 - 25,650 | Low | 0.08 - 0.37 | 262 |
| | | Medium | 0.37 - 1.9 | 209 |
| | | High | 1.9 - 5.16 | 53 |
| High | 25,650 - 60,500 | Low | 0.04 - 0.63 | 65 |
| | | Medium | 0.63 - 1.65 | 52 |
| | | High | 1.65 - 3.39 | 13 |

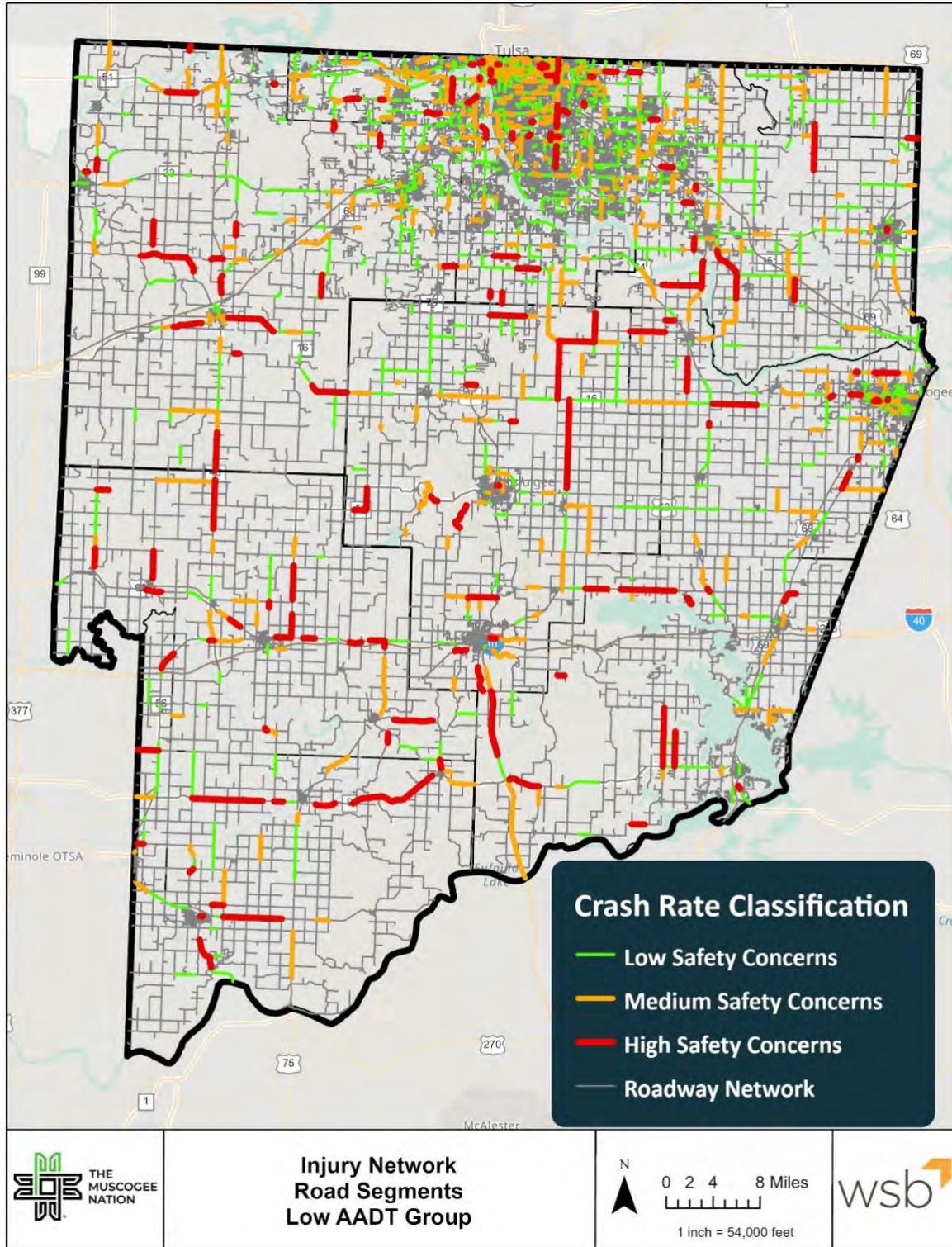


Figure 9 - Roadway Segment Injury Network with Low AADT

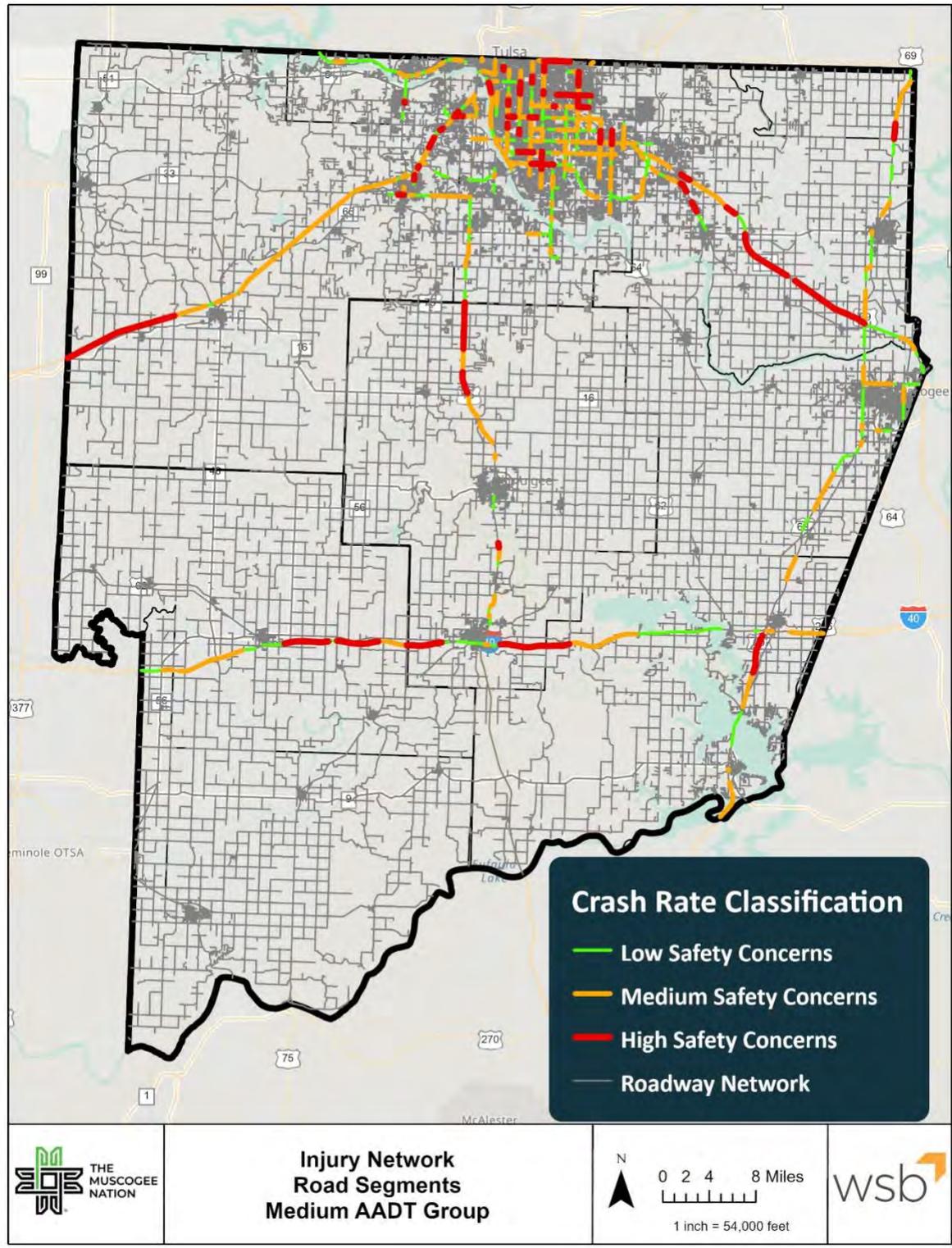


Figure 10 - Roadway Segment Injury Network with Medium AADT

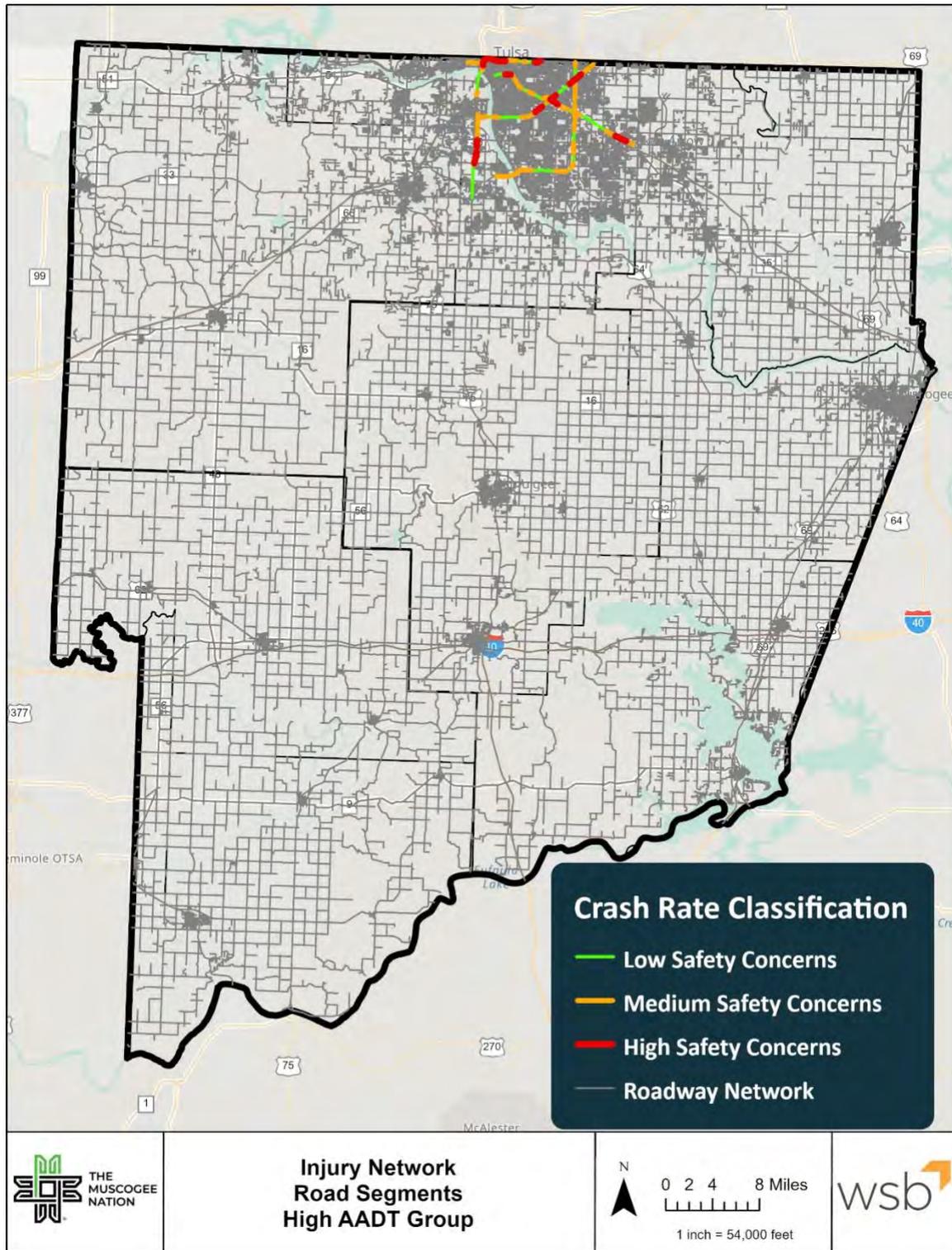


Figure 11 - Roadway Segment Injury Network with High AADT

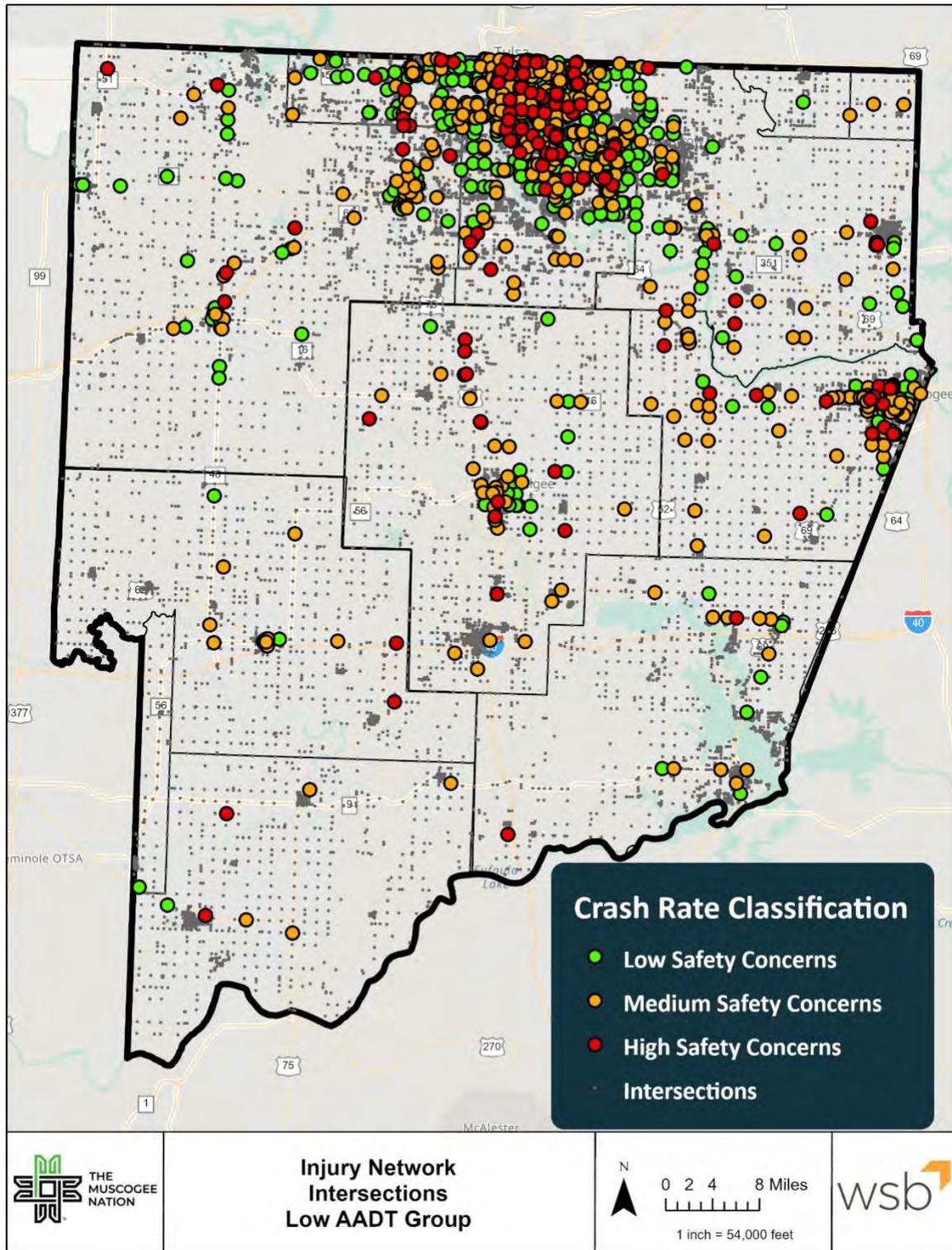


Figure 12 - Intersection Injury Network with Low AADT

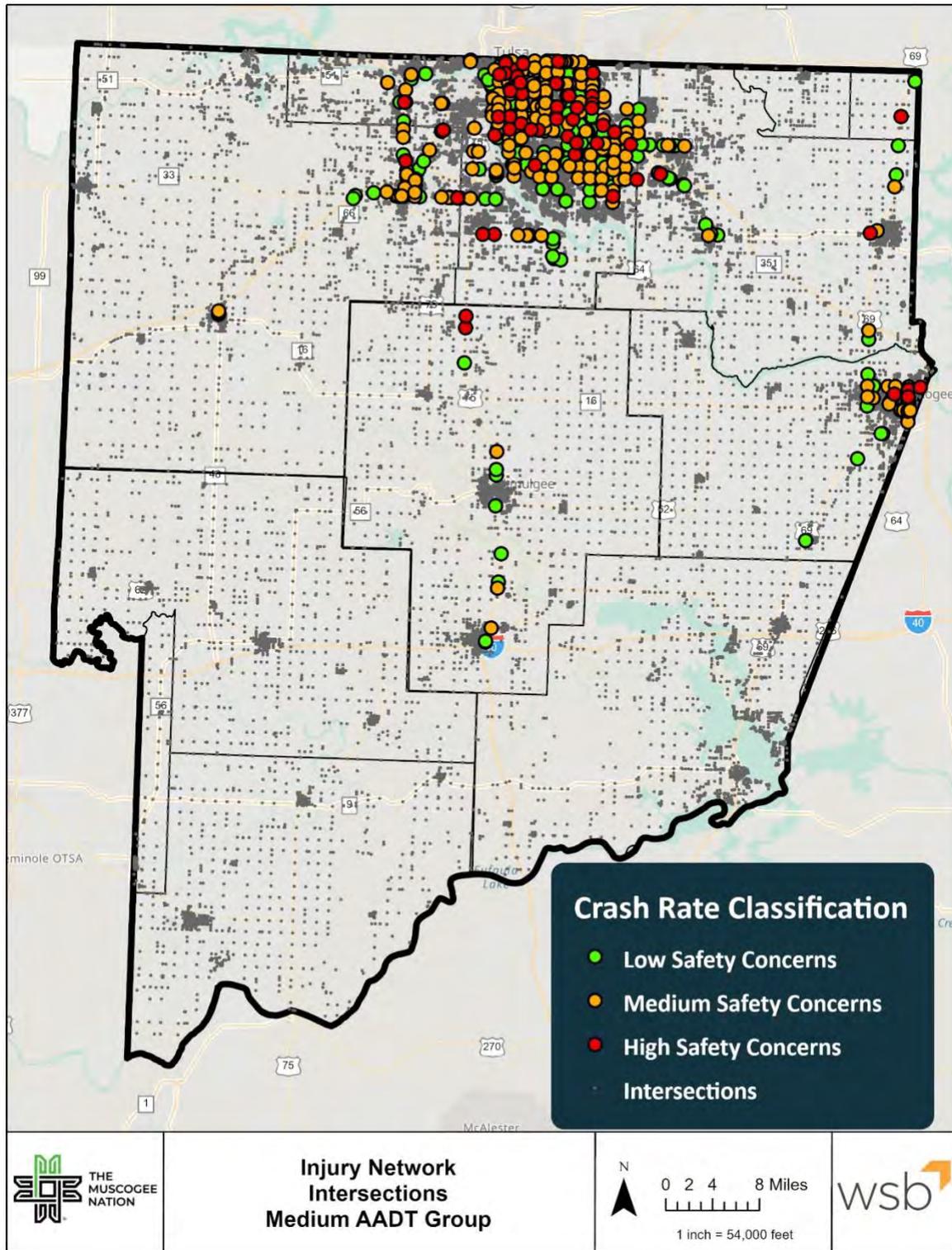


Figure 13 - Intersection Injury Network with Medium AADT

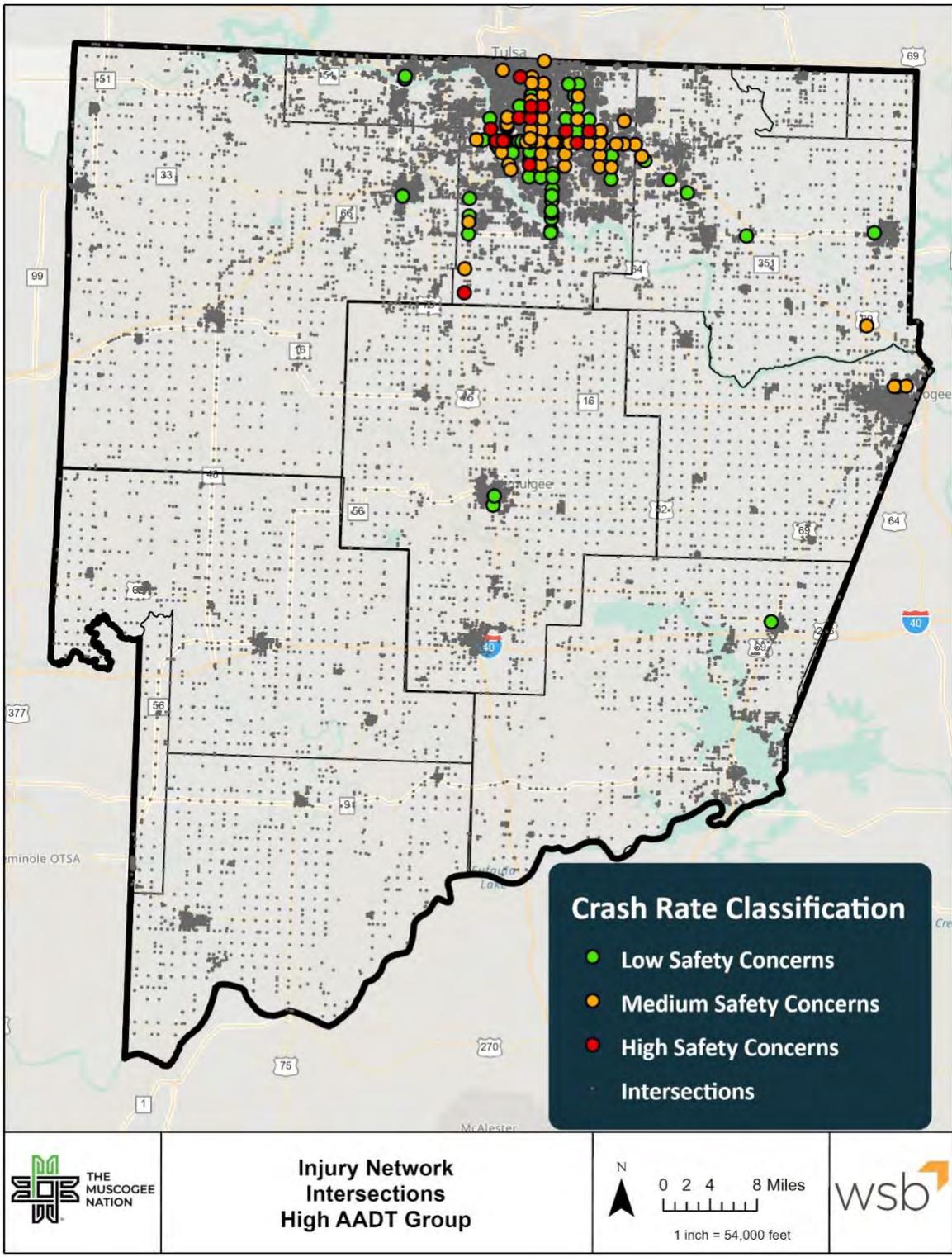


Figure 14 - Intersection Injury Network with High AADT

Injury Network Map Results for MCN

The three AADT specific injury network maps for roadway segments were combined into a single roadway segment injury network maps (**Figure 15**), and the same process was applied to intersections to create intersection injury network maps (**Figure 16**) Finally, the intersection injury and roadway segment injury network map were merged to create the combined injury network map (**Figure 17**).

Table 4 shows the distribution of roadway segments by crash rate categories (Low, Medium, and High), including segment mileage and the corresponding percentages and number of total, fatal, incapacitating, and non-incapacitating crashes. * **Note:** Total number and percentage of crashes related to the three injury severity categories: fatal, incapacitating injuries, and non-incapacitating injuries.

Table 5 presents a similar breakdown for intersections, detailing the number of intersections in each crash rate category along with their associated crash frequencies and severity percentages.

Table 4 - Distribution of Roadway Segments by Crash Rate Categories and Severity

| Crash Rate Categories (from three AADT categories) | Roadway Miles % (#) | Total Crashes* % (#) | Fatal Crashes % (#) | Incap Injury Crashes % (#) | Non-Incap Injury Crashes % (#) |
|---|---------------------------------|-------------------------------|-----------------------------|----------------------------------|--------------------------------------|
| Low | 6.43% (723) | 33.41% (2,064) | 0% (0) | 13.01% (148) | 41.34% (1,916) |
| Medium | 5.66% (636) | 47.73% (2,948) | 40.35% (163) | 67.31% (766) | 43.56% (2,019) |
| High | 2.69% (302) | 18.86% (1,165) | 59.65% (241) | 19.68% (224) | 15.10% (700) |
| Total | 14.78% (1,661) | 100% (6,177) | 100% (404) | 100% (1,138) | 100% (4,635) |

* **Note:** Total number and percentage of crashes related to the three injury severity categories: fatal, incapacitating injuries, and non-incapacitating injuries.

Table 5 - Distribution of Intersections by Crash Rate Categories and Severity

| Crash Rate Categories (from three AADT categories) | Number of Intersections % (#) | Total Crashes* % (#) | Fatal Crashes % (#) | Incap Injury Crashes % (#) | Non-Incap Injury Crashes % (#) |
|---|-------------------------------------|-----------------------------|---------------------------|----------------------------------|--------------------------------------|
| Low | 3.51% (874) | 29.9% (1,351) | 0% (0) | 6.81% (49) | 35.21% (1,302) |
| Medium | 2.8% (698) | 50.1% (2,264) | 24.75% (25) | 60.0% (432) | 48.86% (1,807) |
| High | 0.71% (176) | 20.0% (904) | 75.25% (76) | 33.19% (239) | 15.93% (589) |
| Total | 7.02% (1,748) | 100% 4,519 | 100% 101 | 100% 720 | 100% 3,698 |

* **Note:** Total number and percentage of crashes related to the three injury severity categories: fatal, incapacitating injuries, and non-incapacitating injuries.

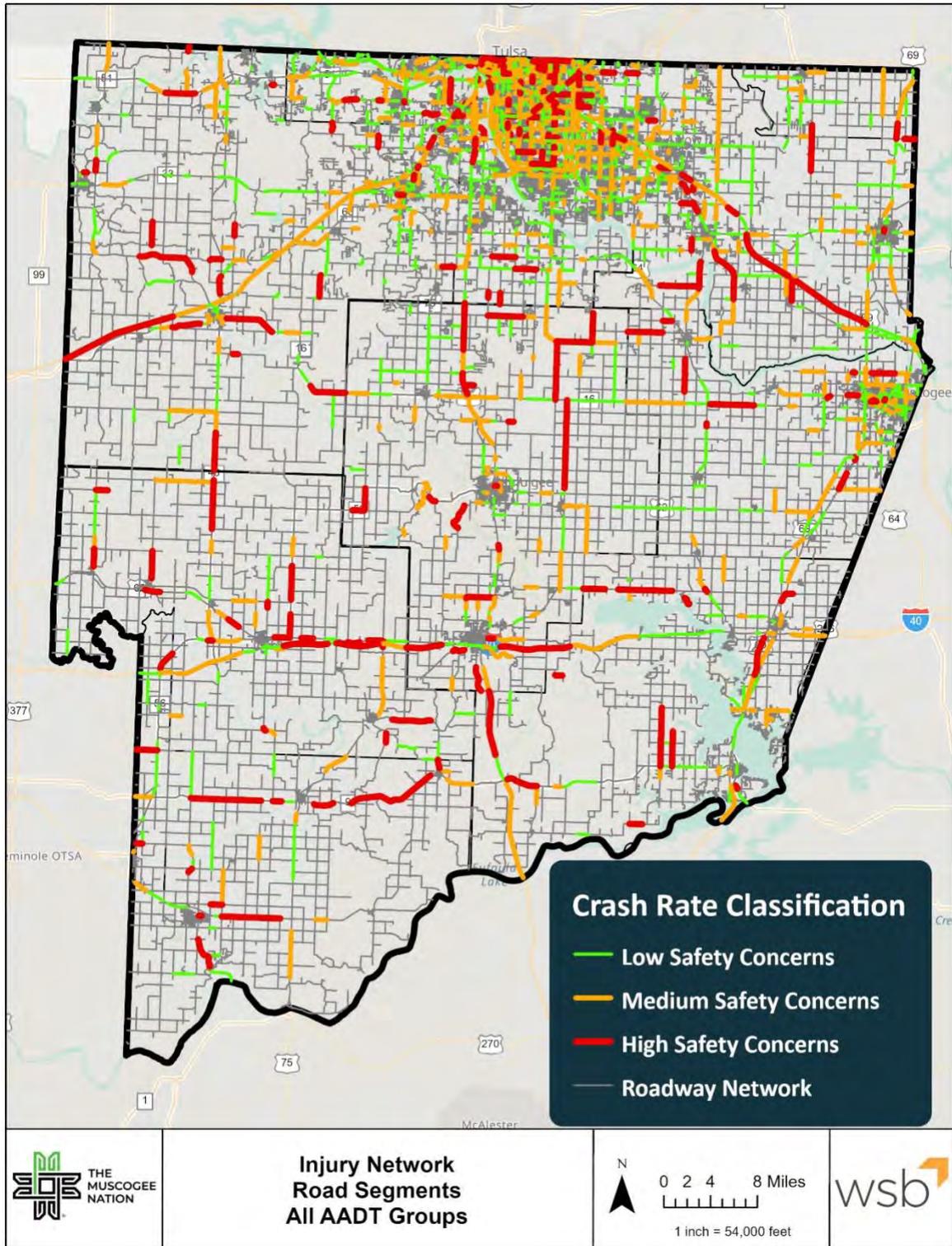


Figure 15 – Roadway Segment Injury Network Map (all AADT categories)

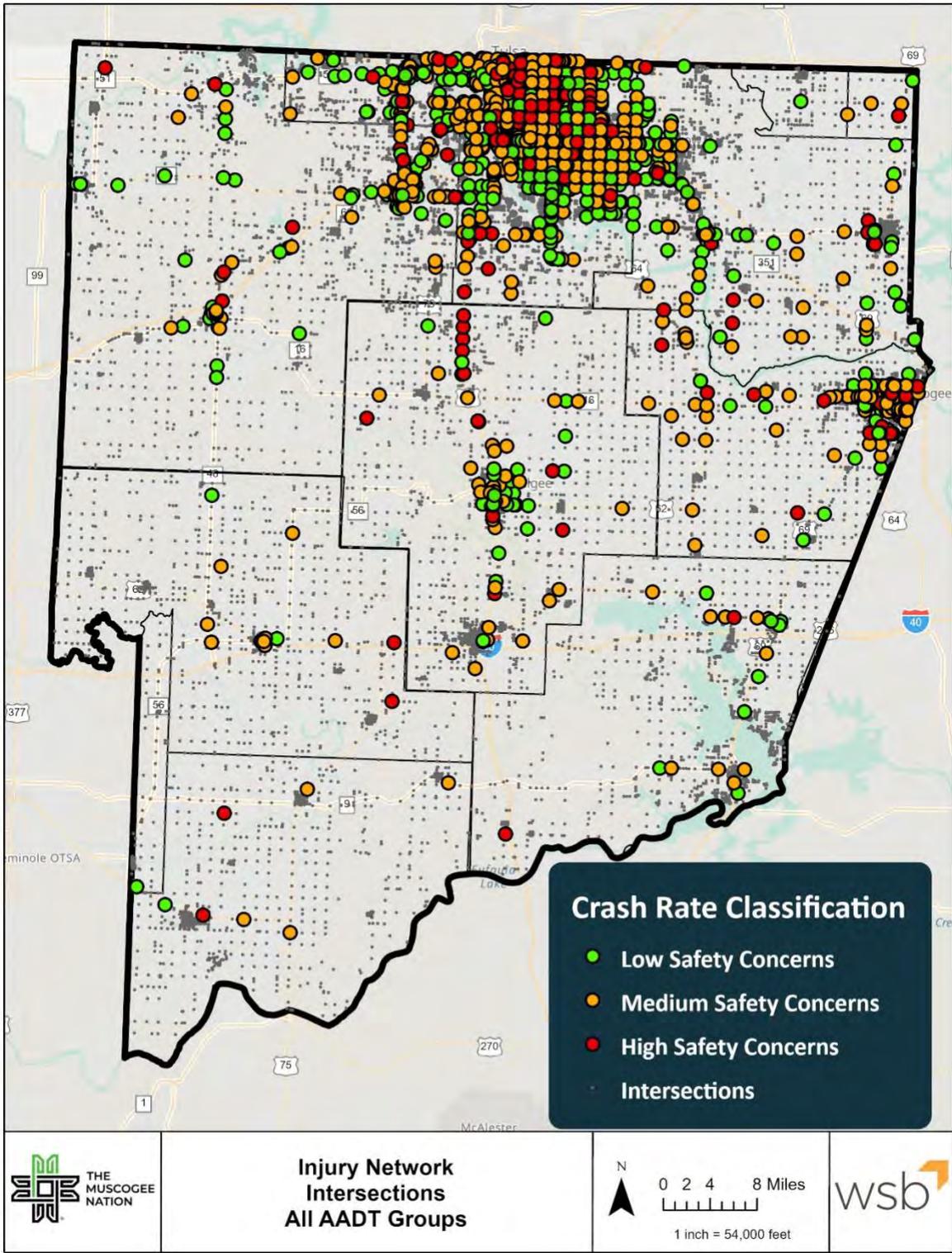


Figure 16 – Intersection Injury Network Map (all AADT categories)

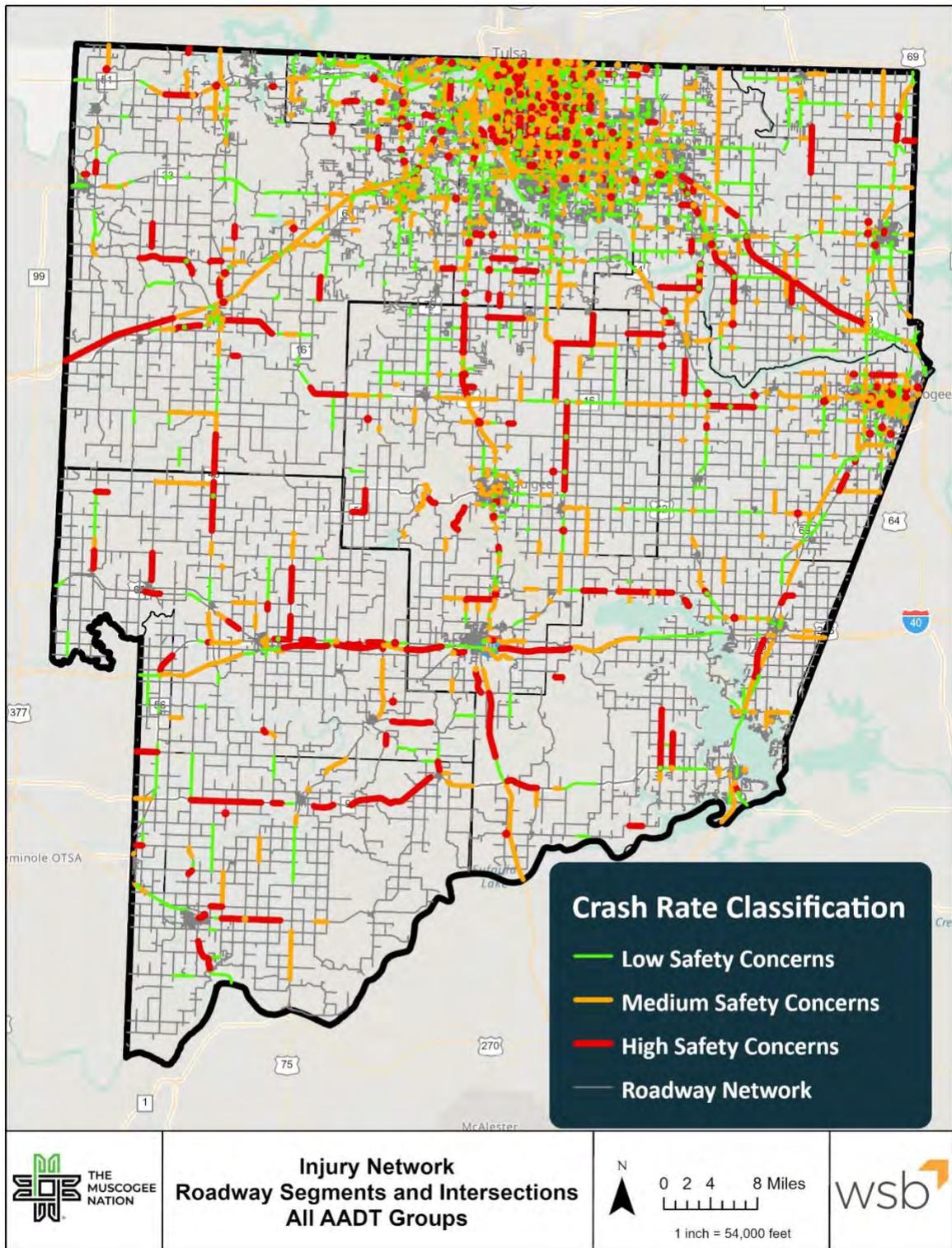


Figure 17 – Injury Network Map (Merged Intersection and Roadway Segment Injury Networks)

Proposed High Injury Network (HIN)

An analysis of injury networks and crash distribution reveals that a significant percentage of crashes occur in the Medium and High crash rate categories. **Table 6** and **Table 7** present the crash percentages for roadway segments and intersections, respectively, while **Table 8** provides the combined crash statistics for both.

Table 6: Crash Distribution by Severity for High and Medium Crash Rate Roadway Segments

| Crash Rate Categories (from three AADT categories) | Roadway Miles % of all (#) | Total Crashes* % (#) | Fatal Crashes % (#) | Incap Injury Crashes % (#) | Non-Incap Injury Crashes % (#) |
|---|----------------------------------|---------------------------------|-----------------------------|----------------------------------|--------------------------------------|
| Medium | 5.66% (636) | 47.73% (2,948) | 40.35% (163) | 67.31% (766) | 43.56% (2,019) |
| High | 2.69% (302) | 18.86% (1,165) | 59.65% (241) | 19.68% (224) | 15.10% (700) |
| Total Roadways | 8.35% (938) | 66.59% (4,113) | 100% (404) | 86.99% (990) | 58.66% (2,719) |

* Note: Total number and percentage of crashes related to the three injury severity categories: fatal, incapacitating injuries, and non-incapacitating injuries.

Table 7: Crash Distribution by Severity for High and Medium Crash Rate Intersections

| Crash Rate Categories (from three AADT categories) | Number of Intersections % of all (#) | Total Crashes* % (#) | Fatal Crashes % (#) | Incap Injury Crashes % (#) | Non-Incap Injury Crashes % (#) |
|---|--|--------------------------------|-----------------------------|----------------------------------|--------------------------------------|
| Medium | 2.8% (698) | 50.1% (2,264) | 24.75% (25) | 60.0% (432) | 48.86% (1,807) |
| High | 0.71% (176) | 20.0% (904) | 75.25% (76) | 33.19% (239) | 15.93% (589) |
| Total Intersections | 3.51% (874) | 70.1% (3,168) | 100% (101) | 93.19% (671) | 64.79% (2,396) |

* Note: Total number and percentage of crashes related to the three injury severity categories: fatal, incapacitating injuries, and non-incapacitating injuries.

Table 8: Crash Distribution by Severity for High and Medium Crash Rate Roadways and Intersections

| Crash Rate Categories (from three AADT categories) | Total Crashes* % (#) | Fatal Crashes % (#) | Incap Injury Crashes % (#) | Non-Incap Injury Crashes % (#) |
|---|---------------------------------|-----------------------------|----------------------------------|--------------------------------------|
| Total Roadways | 38.45% (4,113) | 80.0% (404) | 53.28% (990) | 32.63% (2,719) |
| Total Intersections | 29.62% (3,168) | 20.0% (101) | 36.11% (671) | 28.75% (2,396) |
| Grand Total | 68.07% (7,281) | 100% (505) | 89.39% (1,661) | 61.38% (5,115) |

* Note: Total number and percentage of crashes related to the three injury severity categories: fatal, incapacitating injuries, and non-incapacitating injuries.

As shown in Table 8, **all fatal crashes (100%), 89.39% of incapacitating injury crashes**, and **61.38% of non-incapacitating injury** crashes occurred within the high and medium crash rate categories for roadway segments and intersections. Accordingly, the proposed HIN is defined by these two categories, excluding the low crash rate category. **Figure 18** and **Figure 19** depict the proposed HIN for roadway segments and intersections, respectively, while **Figure 20** illustrates the combined proposed HIN.

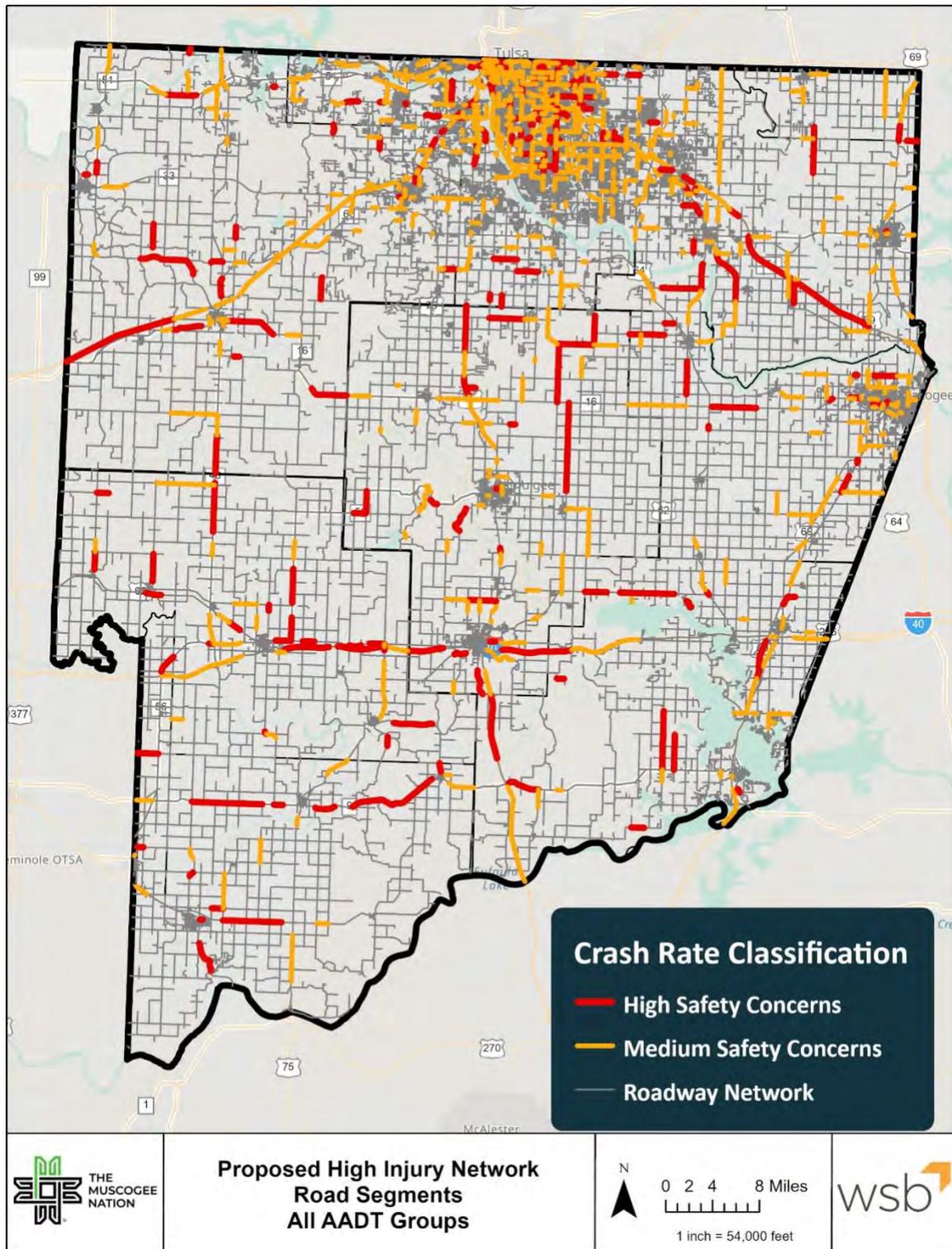


Figure 18: Roadway Segments - Proposed High Injury Network (HIN) Map (all AADT categories)

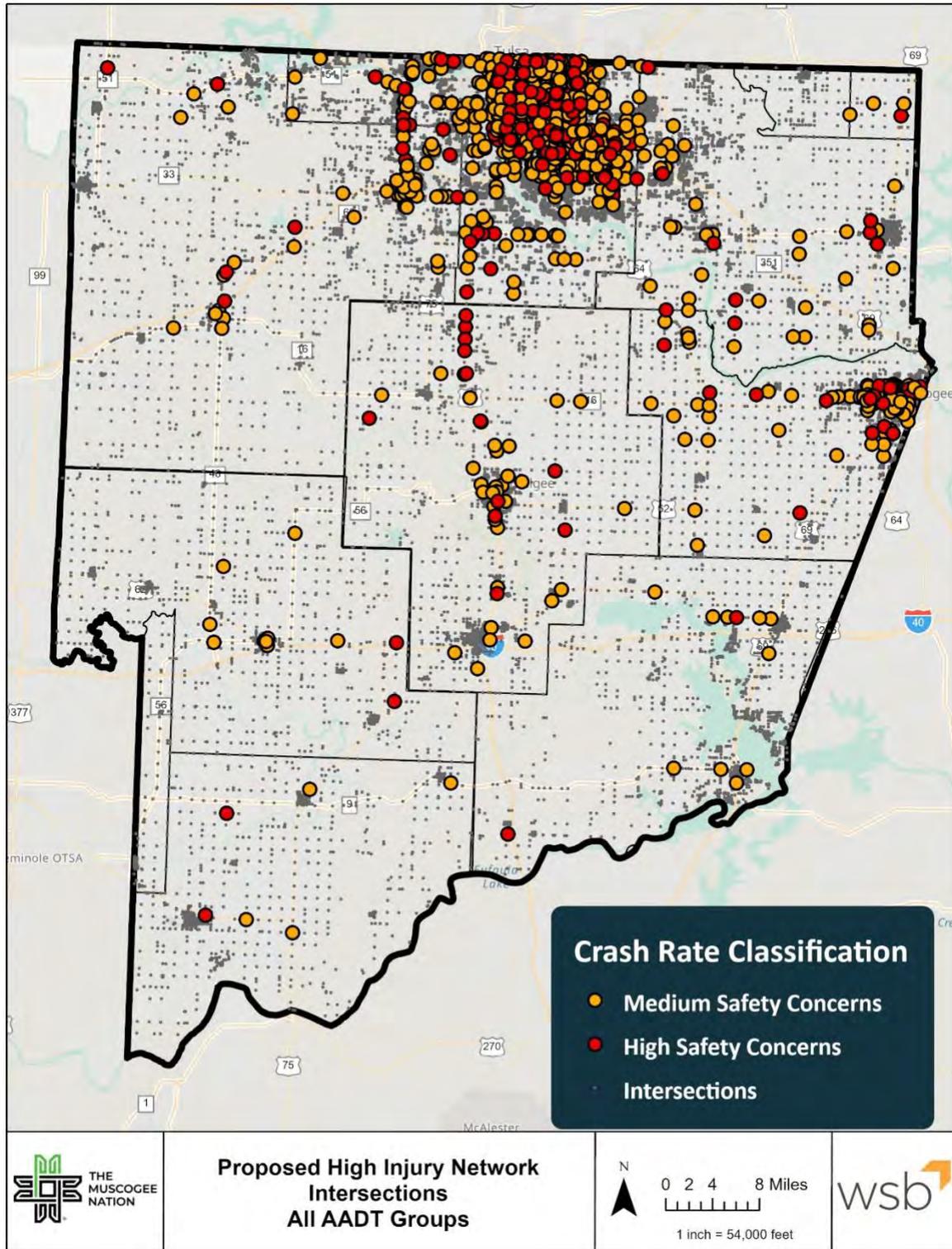


Figure 19: Intersections - Proposed High Injury Network (HIN) Map (all AADT categories)

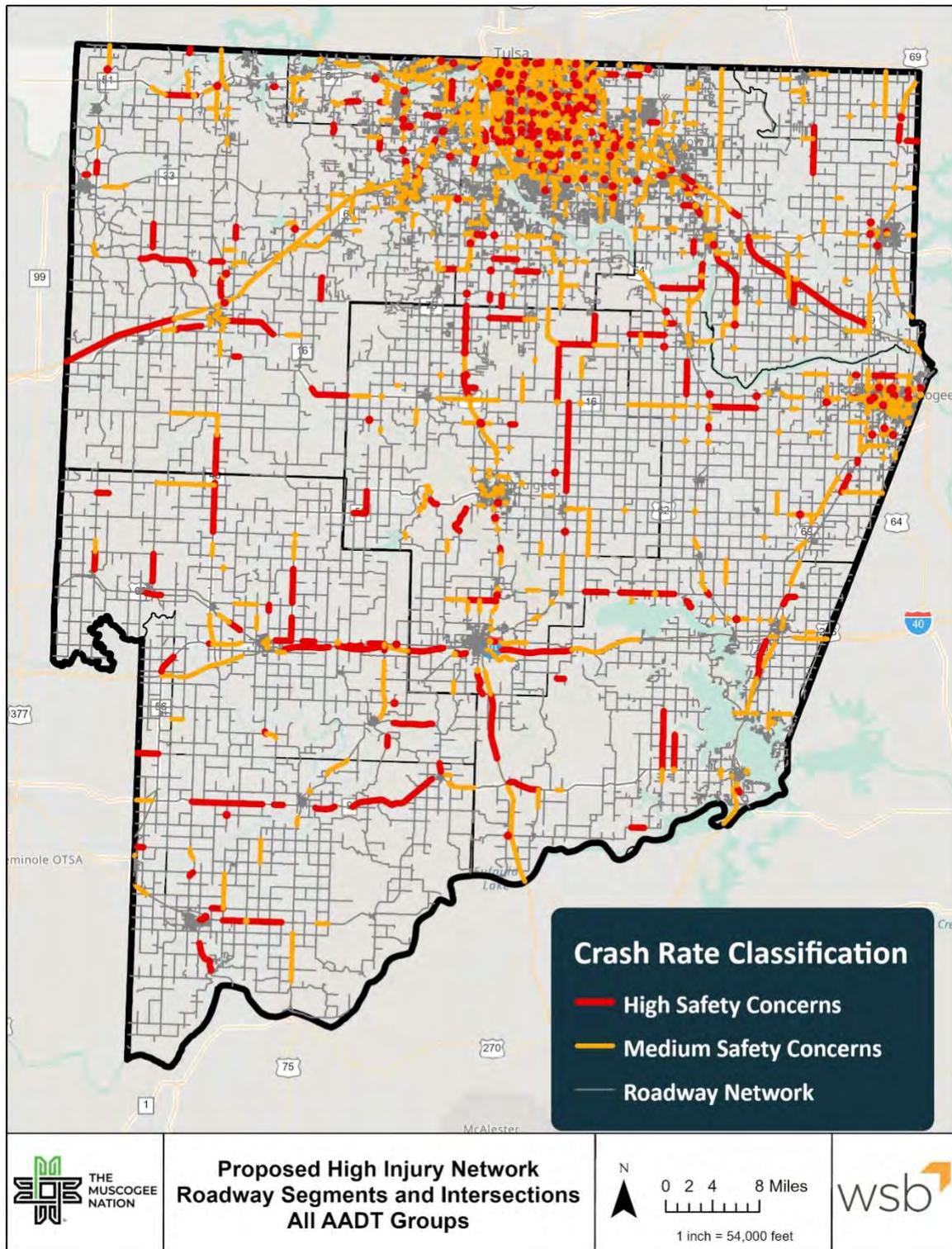
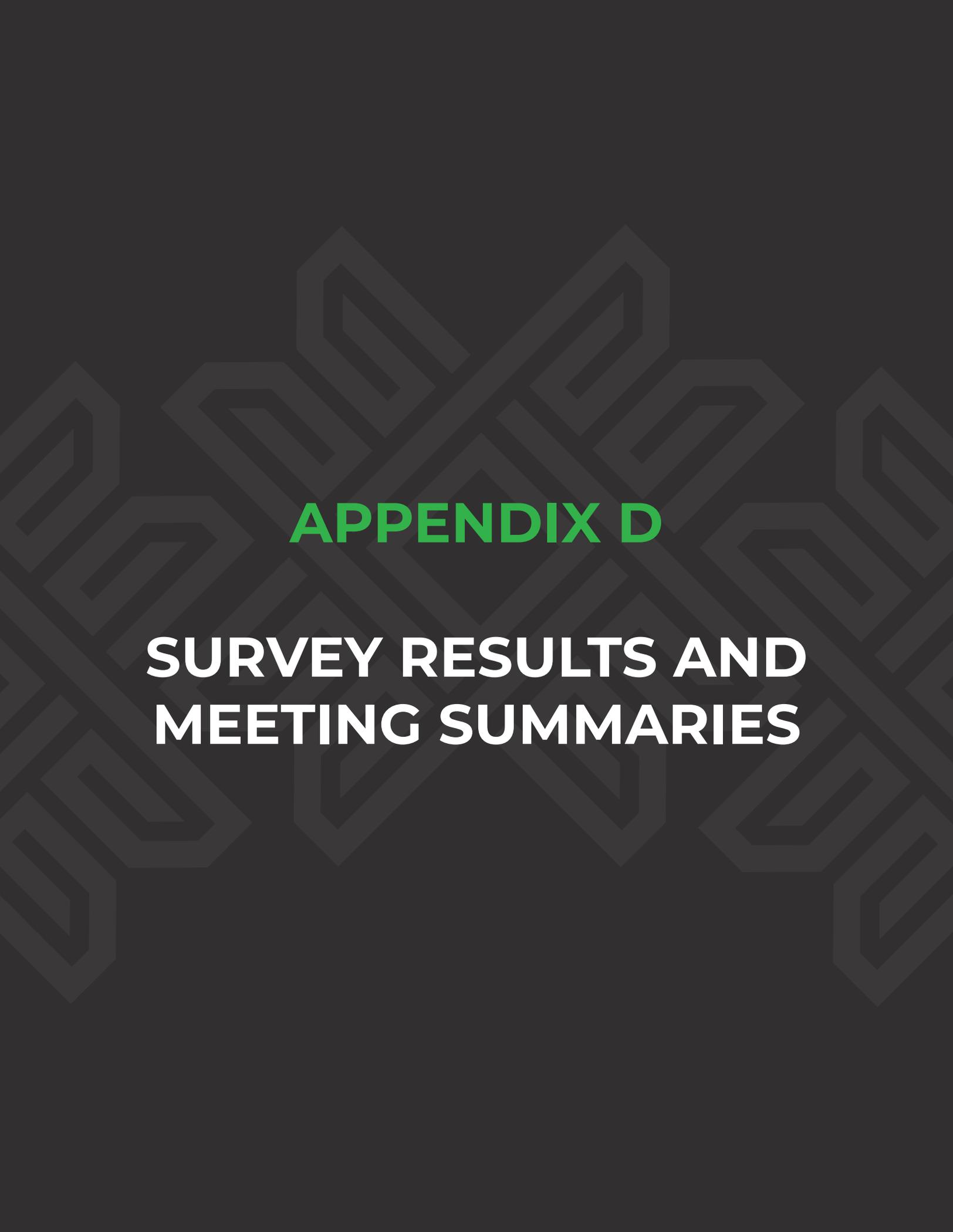


Figure 20: Proposed High Injury Network (HIN) Map (Merged Intersections and Roadway Segments)

NOTE: The definition of the HIN can be modified based on further review of thresholds.



APPENDIX D

SURVEY RESULTS AND MEETING SUMMARIES



Safe Streets for All Plan Meeting Summary

March 12-13, 2025

This document summarizes the engagement process and outcomes from the second round of stakeholder and public meetings held on March 12 and 13, 2025, in Muscogee Creek Nation (MCN).

Background

The MCN Department of Transportation and WSB have partnered to develop a Safe Streets for All (SS4A) Comprehensive Safety Action Plan for the Nation. The Safety Action Plan will comply with the FHWA's self-certification criteria and components to support potential implementation funding applications in the future. It will focus on creating an accessible, safe transportation environment for all roadway users.

Purpose

An engagement plan was developed early in the process to outline target audiences and ways to hear from them. Considering the vast geographic area of MCN, four regions were identified to break up the data for the Plan to make it more relatable and easier to recognize key factors contributing to roadway related injuries and crashes in each region. The four regions were Northwest, Northeast, Southwest, and Southeast. The first round of public meetings happened in October of 2024. The purpose of these was to educate the public about the SS4A Plan and to gather feedback on roads that could use safety improvements.

The second round of meetings happened in March of 2025. The purpose of these was to share the crash data results gathered from ODOT records and community feedback via an online survey and comment map. Hearing from the experiences of the community is critical to ensure this Plan accurately prioritizes areas that need safety improvements. These two meetings were scheduled in centralized venues and both had in-person and virtual options to offer flexibility for attendees to join.

The second round of meetings included both stakeholders and the public. For this project, stakeholders are defined as government agencies, first responders, area schools, businesses, transportation groups, casinos, and planning organizations. The public are defined as community members, citizens, and neighborhood groups.

| Date | Time | Location |
|----------------|----------|--|
| March 12, 2025 | 6-7 p.m. | Okmulgee Indian Community Center, 2900 N. Osage Place, OK 74447 and via zoom |
| March 13, 2025 | 6-7 p.m. | Muscogee Indian Community Center, 335 N. 4 th Street, Muskogee, OK 74401 and via zoom |

A welcome board, information board on the SS4A Plan and a High Injury Network board were displayed to help in person attendees preview some information before the presentation.

Attendance

- March 12, 2025: 13 in person attendees signed in
- March 13, 2025: 1 virtual and 6 in person attendees signed in

Promotion

The following tactics were used to build awareness about the SS4A Plan and meetings. These can be found in Appendix B.

1. **Project website:** A custom ArcGIS hub site that included event information, background information, survey, comment map, pertinent documents, answers to frequently asked questions, and helpline information. The custom URL (MCNSafety.com) and QR code were included in all informational materials to direct people to the website.
2. **Postcard:** Distributed around MCN to build awareness and participation.
3. **Invitation flyer:** Emailed two weeks prior to the meetings to around 565 stakeholders and printed copies were distributed around MCN.
4. **Facebook:** A post was made by the MCN Department of Transportation the day prior to the first meeting on March 11, 2025. This included a graphic with meeting details. It received 4 likes and 6 shares.
5. **Newspaper ads:** Quarter page, color ads were placed in the March 5 publication of the Okmulgee Times and the March 6, 2025 publications of Bristow News, Okemah News Leader and The Eufaula Indian Journal.

Key discussion points

March 12, 2025

Rural Road Safety Challenges

- Many rural roads **lack shoulders**, providing no space for vehicles to pull over or for pedestrians and cyclists to travel safely.
- Open, unobstructed roadways lead to **higher driving speeds** compared to urban areas.
- **Drowsy driving** is a frequent issue in rural settings, increasing crash risks.
- In the **southwest region**, crash data shows a **concerning similarity** between incidents involving **impaired drivers (alcohol/drugs) and drowsy drivers**.

Lighting and Visibility Issues

- **171st, 181st, and 191st streets** are poorly lit, leading to reduced visibility and increased accident risks.
- A resident who recently moved from Florida raised concerns about nighttime visibility, especially during snow events.



THE MUSCOGEE NATION

- Lack of **4-way or 3-way stop signs** makes navigation difficult, especially for those unfamiliar with the area.
- Poor lighting near residential areas poses **dangers for children** walking near roadways.
- Near the **casino and new housing developments**, pedestrian safety is a growing concern.
- People, sometimes impaired, walk on the road due to the **lack of sidewalks or shoulders**.
- Increased foot traffic combined with poor visibility creates **significant safety risks**.

Data Accuracy and Coordination

- Crash data used in the project analysis comes from **ODOT (2017-2021)**.
- Community members emphasized the need to include crash data from the **Nation**.
- Some crashes may be **underreported**, potentially affecting the accuracy of safety assessments.
- MCNDOT has requested additional crash data from the **Nation**, but it has not yet been received.

March 13, 2025

Infrastructure and Maintenance Concerns

- **Street lighting issues:** Poor visibility at night remains a major safety concern.

Signage concerns

- **Highway 244** and areas in the **southwest region** lack proper markers and signage.

Pothole-related safety risks

- Could potholes cause drivers to swerve, potentially endangering cyclists and pedestrians?

Specific problem areas include:

- **South Main/Elgin** – potholes reported.
- **Main Street** – traffic congestion, truck traffic, and access to downtown pose additional safety concerns.

Reflectors and road markings

- Poor weather conditions reduce the effectiveness of road reflectors.
- **South Okmulgee and Dustin areas** are especially dark and desolate, requiring **better lighting, reflectors, and road markings**.

School Zone Traffic & Coordination

- **Koleta school zone:** Traffic backups occur due to **two lanes of vehicles during pick-up and drop-off**.

Community members asked whether **city and county officials** actively collaborate and consider public feedback when making safety improvements.

'Thank you' email

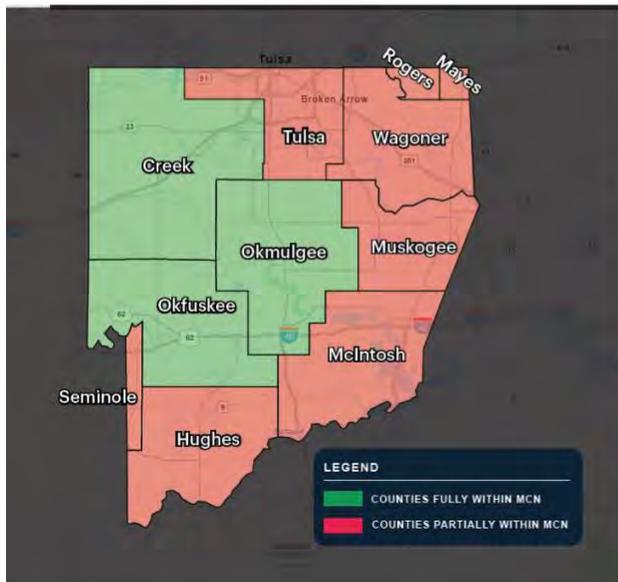
At the conclusion of these meetings, a thank you email on behalf of MCN was sent to the stakeholder contact list and the individuals who left an email address, either on the sign in sheets or via zoom. This message thanked attendees for their participation, provided transparency for the Plan's development process, and reminded individuals to share feedback by March 31, 2025.

Next steps

The project team will finish the final Safe Streets for All Plan for MCN in May of 2025 and incorporate the insights received from the community.

Appendix B: Promotion

MUSCOGEE CREEK NATION ROADWAY SAFETY ACTION

The Muscogee Nation Department of Transportation is creating a plan for future roadway safety improvements. Part of this process involves learning from the experiences of the community and incorporating this feedback into the final plan.

Visit the project website to learn more and to see how you can get involved.



Scan to learn more!
MCNSAFETY.COM

Figure 1 Postcard side 1



THE MUSCOGEE NATION

MUSCOGEE CREEK NATION ROADWAY SAFETY ACTION PLAN



HELPLINE INFORMATION



EMAIL:
info@MCNSafety.com



PHONE:
(918) 236-7314



**Scan to
learn more**

MCNSAFETY.COM

Figure 2 Postcard side 2

Muscogee Creek Nation Safe Streets for All (SS4A) COMPREHENSIVE SAFETY ACTION PLAN



Upcoming Meetings

We heard from you and now it's time to share our findings before the SS4A Plan is finalized. Join us to review our research and provide input on the Safe Streets for All (SS4A) Plan before it's finalized. Your feedback will help prioritize projects and secure funding for safety improvements across the Muscogee Creek Nation. Let's work together to create safer streets for all!

Light snacks and beverages will be provided.

MAP OF THE MUSCOGEE CREEK NATION



| DATE | TIME | LOCATION | VIRTUAL |
|----------------|------------|--|---|
| March 12, 2025 | 6 - 7 p.m. | Okmulgee Indian Community Center 2900 N. Osage Place, Okmulgee, OK 74447 | https://bit.ly/MuscogeeCreekNationSS4A-1 |
| March 13, 2025 | 6 - 7 p.m. | Muscogee Indian Community Center 335 N. 4th Street, Muskogee, OK 74401 | https://bit.ly/MuscogeeCreekNationSS4A-2 |

RSVP to Tara at tsexton@muscogeenation.com or 918-732-7907 by March 5, 2025.



Scan to
learn more!
MCNSAFETY.COM

Helpline



EMAIL:
info@MCNSafety.com

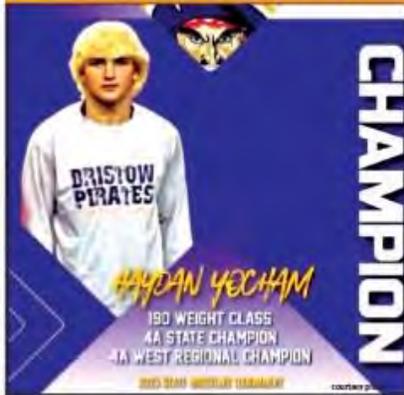


PHONE:
(918) 236-7314

Figure 3 Invitation flyer



Yocham takes title.....State Champion



Hayden Yocham takes the podium with a first place championship at the State Wrestling Tournament.



Bristow Pirate Mack Powell, takes the podium with a third place win in the tournament at the 150 pound weight class.



Bristow wrestler Jaron Freeman also takes a third place spot on the podium for the 125 lb weight class.

TSET HEALTHY LIVING PROGRAM:
Investing in Creek County's Health

Did you know half of all cancers are caused by obesity and tobacco use? It's true — and Oklahoma has some of the highest rates of tobacco use and obesity in the nation. TSET Healthy Living Program (HLP) grants use evidence-based methods to address obesity and tobacco prevention and cessation at a local level.

| OBESITY RATE (%) | | ADULT SMOKING RATE (%) | |
|------------------|------|------------------------|------|
| 2019 | 34.3 | 2019 | 22.1 |
| 2020 | 35.7 | 2020 | 20.5 |
| 2021 | 39.4 | 2021 | 18.1 |

Source: Behavioral Risk Factor Surveillance System - 2019-2021

Here are the ways your local TSET HLP grantee is working to improve the health of Creek County:

- Preventing and reducing youth retail access to tobacco and vapes.
- Workforce policies that restrict smoking/cigarette use.
- Working with local retailers to increase the availability, quality and affordability of healthy foods.
- Partnering with local food assistance programs to increase access to healthy food options.
- Support of local farmers markets.

To see other ways TSET HLP is impacting your community, visit oklahoma.gov/tset/hlp.

To get involved in promoting health in Creek County, contact the TSET HLP Grantee at Oklahoma State University - Department of Wellness - Sponsored Programs - Creek (918) 227-0060.

TSET HEALTHY LIVING PROGRAM
Serving Creek County

YOU'RE INVITED!

Help Make Our Streets Safer

We heard from you and now it's time to share our findings before the SS4A Plan is finalized. Join us to review our research and provide input on the Safe Streets for All (SS4A) Plan before it's finalized. Your feedback will help prioritize projects and secure funding for safety improvements across the Muscogee Creek Nation. Let's work together to create safer streets for all!

Light snacks and beverages will be provided.

OKMUSCOGEE - March 12th
Muscogee Creek Community Center
6:00p - 7:00pm
2000 N. Deep River, Muskogee, OK 74401
Muscookee@muscookee.com

MUSKOGEE - March 18th
Muscogee Creek Community Center
6:00p - 7:00pm
2000 N. Deep River, Muskogee, OK 74401
Muscookee@muscookee.com

RSVP TO TARA AT [TSETXTON@MUSCOGEEGENERATION.COM](mailto:tsetxton@muscogeegeneration.com)
OR 918-732-7907

SCAN TO LEARN MORE
MUSCOOKEE.COM

Figure 4 Bristow News Ad



Congratulations to the Checotah 7th Grade Advanced Band on earning a Superior Rating on Stage and in Sight Reading Friday at the Checotah Band Daze Contest. COURTESY



COURTESY

YOU'RE INVITED!

Help Make Our Streets Safer

We heard from you and now it's time to share our findings before the SS4A Plan is finalized. Join us to review our research and provide input on the Safe Streets for All (SS4A) Plan before it's finalized. Your feedback will help prioritize projects and secure funding for safety improvements across the Muscogee Creek Nation. Let's work together to create safer streets for all!

Light snacks and beverages will be provided.



RSVP TO TARA AT tsexton@muscogeenation.com
OR 918-732-7907



Middle School January SOM named

The January Student of the Month award winners have been named. The list includes:

8th grade
Adeya Daniel is the granddaughter of Donna and Tom Daniel. Her favorite class is Mr. Hodgins' Geography, and she plans to become a hairstylist.
Jamani Warrior is the son of Meko War-

rrior. His favorite subject is all of his classes, and he plans on becoming a doctor.

7th grade
Autumn Linn is a sister to Starl Nixby. Her favorite class is science, and she plans to become a nurse.
RJ Luch is the son of Jimmy Luch. His favorite class is geography, and he plans on pursu-

ing a career in business.

6th grade
Madison Lee is the daughter of April and Chris Pendley & Halle and Justin Lee. Her favorite class is AG and she plans to attend college and live with Savannah.

Dakota Kiker is the son of Jennifer and Dennis Kiker. His favorite class is Math and he plans to own a railroad.

Saddle up and save lives with Our Blood Institute

Successful donors will receive a limited-edition cowboy-themed T-shirt and chance to win classic cowboy gear

Are you ready to wrangle up some good? Saddle up and donate blood with Our Blood Institute this March and April to help save lives! Successful donors will receive a limited-edition cowboy-themed T-shirt, while supplies last.* Plus, every week in March, donors will be entered to win a cowboy hat of their choice! And in April, we're giv-

ing away a pair of cowboy boots every week... because no cowboy (or cowgirl) should go without!

"Just like cowboys look out for their herd, we're calling on our community to look out for their neighbors," said Dr. John Armitage, president and CEO of Our Blood Institute. "By rolling up your sleeve and giving blood, you're

lending a hand in patients and families who need your help. It's a small act that shows the true spirit of neighborly care and generosity."

Anyone who is healthy and 16 years old* or older can give blood. Donation typically takes only about an hour, and one donation saves up to three lives. Appointments to donate can be made online at ohi.org or by calling 877-346-8777. Walk-ins are also welcome.

*16-year-olds must weigh at least 125 pounds and provide signed parental permission; 17-year-olds must weigh at least 125 pounds; 18+ year olds must weigh at least 110 pounds. Photo ID required.

To report errors requiring correction or clarification, call or e-mail the editor at phone no. 918-689-2191 or e-mail jerry@cookson.news.

Figure 5 Eufaula Indian Journal Ad



LEGACY

BY TARA HARRIS

July 10, 1978, stepping into her role as office manager and administrator for District 2. Over the years, she worked under five county commissioners, each one relying on her organizational skills, institutional knowledge and steady presence to keep things running smoothly.

- Willard Jacobs - 4 years
- Tom Duncan - 8 years
- Roger Ballenger - 16 years
- Bobby Hardridge - 14 years
- R. David Walker - 4 years

Her role in the county office evolved over the years as technology advanced. She recalled when computers became part of the daily routine, a change she embraced despite her early years relying on handwritten paperwork and typewriters. "Basically, when I started here, we didn't do all that stuff" she recalled with a chuckle. "Back then, we didn't really do much paperwork out here. But then, after a while, we started getting computers and everything, so basically, all this was new - learning computers - but I've kept up."

Through every change, Jean remained a steady force, guiding commissioners and employees through transitions while maintaining the heart of the office.

More Than a Job - A Family
Jean's impact extends far beyond paperwork and county projects. She be-



came the heart of the District 2 office, a mentor, a friend, and even a mother figure to many. The District 2 crew affectionately calls her "Mom," as she has kept them organized, in line, and well taken care of over the years. She even had her own designated parking spot right by the front door, a small but meaningful token of her importance to the team.

Beyond her work family, Jean and her husband, John, have built a life centered around love and dedication. Married for over 60 years, they are the proud parents of two children, dating grandparents to four grandchildren, and great grandparents to three

great grandchildren. Their extended family also includes Derek Burton and his family, who are cherished as their own.

A Retirement Well Earned

Jean had always joked that the only way she would leave was if they "ran her off." Even in 2023, she had no immediate plans to retire, stating that she still loved coming to work every day.

But now, after 47 years of dedicated service, she is finally stepping away - not because she was "run off," but because she has more life to enjoy, more time to spend with family, and more memories to create beyond the walls of the District 2 office.

Former Commissioner Robert Hardridge, who worked closely with Jean for over a decade, summed up her impact beautifully:

"She has worked for some really lar-

gic commissioners ... and I owe her a lot as far as a friend. She's been like a sister. During some of my deepest valleys, she has been there for me. She has been an asset to me during my 'hour of duty' ... Jean and I have laughed until we cried. We have had a good time out here."

Her dedication, kindness, and unwavering commitment will be missed, but her legacy in Okmulgee County is firmly cemented.

As she embarks on this new chapter of life, one thing is certain - Jean Coughlin has left a lasting mark on Okmulgee County, and the friendships and memories she has built over the years will not soon be forgotten.

Here's to you, Jean. May your retirement be filled with as much joy, laughter, and love as the 47 years you gave to your community. You have earned it.

YOU'RE INVITED!

Help Make Our Streets Safer

We heard from you and now it's time to share our findings before the SS4A Plan is finalized. Join us to review our research and provide input on the Safe Streets for All (SS4A) Plan before it's finalized. Your feedback will help prioritize projects and secure funding for safety improvements across the Muscogee Creek Nation. Let's work together to create safer streets for all!

Light snacks and beverages will be provided.



RSVP TO TARA AT tsexton@muscogeenation.com. OR 918-732-7907



US DERMATOLOGY PARTNERS

OUR OFFICE IS RELOCATING MARCH 2025!

Jenna King, MSN, APRN-C
Nurse Practitioner / Certified

- Medical Care - Acne, Psoriasis, Eczema & Other Skin Issues
- Skin Cancer - Skin Checks
- Wound Repair / Provenance & Footcare

Now Accepting New Patients!
(918) 203-8118

112 N. Grand Avenue, Okmulgee, OK 74447

WWW.USDERMATOLOGYPARTNERS.COM

Figure 6 Okmulgee Times Ad

Appendix B: Meeting materials

MUSCOGEE NATION ROADWAY SAFETY PLAN



Please print your information below.

Name _____ Phone _____

Email _____

Address _____

GET INVOLVED & LEARN MORE!

For more information, visit MCNSafety.com or scan the QR code. For help, call **(918) 236-7314**



Figure 1 Comment card template

Welcome!

Safe Streets for All (SS4A) Plan

MEETING



THE MUSCOGEE NATION

SCAN TO LEARN MORE
& SHARE YOUR FEEDBACK!



Figure 2 Welcome board



THE MUSCOGEE NATION

SS4A Plan Background & Importance

SAFE STREETS FOR ALL (SS4A) PLAN MEETING



BACKGROUND

The Muscogee Nation Department of Transportation was awarded a **Safe Streets for All (SS4A) planning grant** from the US Department of Transportation to create a roadway safety action plan.

GOAL

Identify projects and strategies to reduce roadway fatalities and serious injuries within the Muscogee Nation's roadway network.



WHY IS AN SS4A PLAN IMPORTANT?

- Prevent serious injury & fatal crashes
- Infrastructure improvements
- Traffic management
- Community engagement
- Future funding for improvements

Figure 3 Background and importance board

SS4A Plan High Injury Network

SAFE STREETS FOR ALL (SS4A) PLAN MEETING



HIGH INJURY NETWORK (HIN) DEVELOPMENT

- Uses crash data (police reports, hospital records) & AADT (Average Annual Daily Traffic)
- Identifies locations with severe injuries/fatalities, not just total crashes
- Visually highlights high-crash locations on a network map
- Considers a combination of factors including pedestrians, bikes, road design, speed, vulnerable populations

HIN PURPOSE & USE

- **Prioritizes Improvements:** Focuses resources on the most unsafe areas
- **Guides Roadway Changes:** Informs decisions on signals, crosswalks, lighting, speed limits, etc.
- **Enhances Pedestrian/Bike Safety:** Targets improvements for vulnerable road users
- **Data-Based Decisions:** Ensures effective, evidence-backed safety measures
- **Community Engagement:** Provides transparency and helps invite public input



Figure 4 High Injury Network board

Safe Streets for All

COMPREHENSIVE SAFETY ACTION PLAN FOR MUSCOGEE NATION



Overview and Purpose

- Through the SS4A grant program, a Comprehensive Safety Action Plan is the building block to improve roadway safety
- The Plan is aimed at reducing serious-injury and fatal crashes that affect all roadway users
- Data analysis will characterize roadway safety issues & strengthen the community's approach to address the most significant safety risks and locations
- The Plan will use the Safe System Approach (roadway safety guidelines), include community input, and refocus the transportation system design and operation to help save lives

Principles of a Safe System Approach



Project Timeline

**From the US Department of Transportation*



**Dates subject to change*

What are the Benefits

- Save lives and prevent serious injuries in your community
- Understand your communities traffic safety concerns and priorities
- Improve roadway safety and build a network of support
- Create a prioritized list of traffic safety strategies and projects well into the future

Scan to learn more & share your feedback!

MCNSAFETY.COM



Figure 5 Meeting handout

Appendix C: Photos





THE MUSCOGEE NATION



Safe Streets for All Comprehensive Safety Action Plan Meeting Summary

October 8-10 & 22-24, 2024

This document summarizes the engagement process from the first round of stakeholder and public meetings held October 8-10 and 22-24, 2024 in Muscogee Creek Nation (MCN).

Project Background

The MCN Department of Transportation and WSB partnered to develop a Safe Streets for All (SS4A) Comprehensive Safety Action Plan. The Safety Action Plan will comply with the FHWA's self-certification criteria and components to support potential implementation funding applications in the future. It will focus on creating an accessible, and safe transportation environment for all roadway users.

An engagement plan was developed early in the process to outline target audiences and ways to hear from them. Considering the vast geographic area of MCN, four regions were identified -- Northwest, Northeast, Southwest, and Southeast. Meetings were scheduled in centralized venues to each region, and all were in-person to promote conversation.

For this project, stakeholders are defined as government agencies, first responders, area schools, businesses, transportation groups, casinos, and planning organizations. The public are defined as community members, citizens, and neighborhood groups.

Meetings

An invitation flyer was crafted and used to build meeting attendance. The MCN oversight team provided a list of 565 stakeholders, and each was invited to the meetings via an email sent 2 weeks prior to the first meeting date. The flyer was shared in the email and printed for MCN representatives to invite members of the public. The meetings were advertised in the following 4 newspapers the week prior to the first meeting: Bristow News, Okmulgee Times, Eufaula Indian Journal, and Okemah News Leader. Social media graphics were created and MCN posted to Facebook to promote the meetings. The invitation flyer, newspaper ads and Facebook posts can be found in Appendix A-C.

The following twelve meetings were held throughout six days:

- October 8, 2024, at the Muskogee Civic Center in Muskogee, OK
 - Stakeholder group at 3 p.m.
 - Public group at 5 p.m.
- October 9, 2024, at Venue 66 in Bristow, OK
 - Stakeholder group at 3 p.m.
 - Public group at 5 p.m.



THE MUSCOGEE NATION

- October 10, 2024, at the OSUIT Student Union in Okmulgee, OK
 - Stakeholder group at 3 p.m.
 - Public group at 5 p.m.
- October 22, 2024, at Legacy on Main Street in Eufaula, OK
 - Stakeholder group at 3 p.m.
 - Public group at 5 p.m.
- October 23, 2024, at the Okfuskee County Barn in Okemah, OK
 - Stakeholder group at 3 p.m.
 - Public group at 5 p.m.
- October 24, 2024, at Holdenville High School Cafeteria in Holdenville, OK
 - Stakeholder group at 3 p.m.
 - Public group at 5 p.m.

The meetings provided an opportunity for attendees to learn about the SS4A plan, share feedback, and ask questions of project experts. Each meeting included a welcome table where attendees were asked to sign in and printed surveys were made available. Folks were given comment cards to write down ideas and a dinner was served between the two meetings, from 4 p.m. to 5 p.m. Welcome and information boards, with a short summary of the SS4A Safety Action Plan, were displayed to provide initial context for attendees as they arrived. The comment card template can be found in Appendix D and the information boards are displayed in Appendix E.

Each meeting was kicked off with a welcome message followed by a presentation about the importance of the Safety Action Plan. The presentation included an overview of the SS4A Safety Action Plan along with WSB's preliminary analysis of existing conditions of the roadway network in MCN. At the conclusion of the presentation, time was provided to either ask questions or talk about the project one-on-one with MCN and WSB staff. Many meeting attendees took the opportunity to discuss various issues and provide background information, transportation challenges, and safety concerns to project team members during this time.

Attendees

The stakeholder meetings were attended; however, minimal community members attended the public meetings. Based on those who signed in, the project team had a direct impact on a total of approximately 55 stakeholders during these meetings. Photos of these meetings can be found in Appendix F.

Project Website

Prior to the October meetings, a project website was developed with a custom URL and QR code. The purpose of the website is to make it easy for stakeholders and the community to stay informed about the Safety Action Plan and provide input on their own schedule.

Custom URL: MCNsafety.com



Figure 1 Screenshot of project website home page

The project website includes background information, a short survey and an interactive comment map for MCN. At each meeting, participants were introduced to the website and shown how to navigate it. After the meetings, each regional presentation was uploaded for attendees to reference and for those who could not attend a meeting to have the opportunity to review what was presented. The website also includes answers to frequently asked questions and project helpline information. The helpline is monitored during regular business hours to give the community a convenient way to reach project team members.

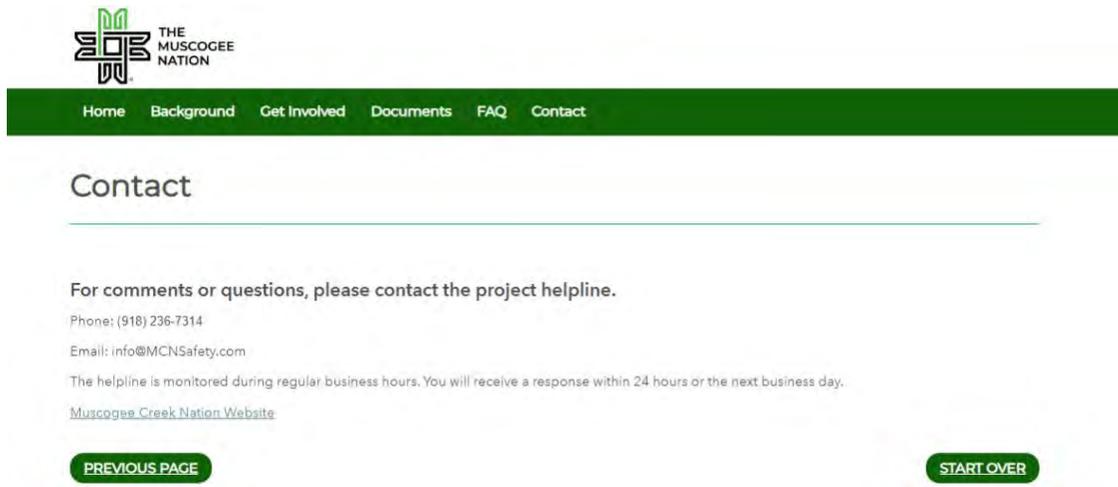


Figure 2 Contact information for the project team

Survey and Comment Maps

The survey and interactive comment map were open from September 6, 2024, to November 7, 2024.

SS4A Plan

- 24 survey responses
- 20 comments on the map

The comment map input is below:

- Lots of Crashes and very hard to turn on and off of Hwy 75.
 - What county do you live in? Okfuskee
 - What city do you live in? Okemah
- Very bad intersection. Could it be turned into a 4-way stop?
 - What county do you live in? Okfuskee
 - What city do you live in? Okemah
- North Woody Guthrie (Lake Road) has no shoulders. It is very dangerous because of people that walk to and from their housing. They currently walk in the road and due to the hill you cannot see them if you are going south.
 - What county do you live in? Okfuskee
 - What city do you live in? Okemah
- Highway 62, going east, has no shoulders. This highway has many bicyclists. One man was killed approximately two years ago riding his bike on this highway.
 - What county do you live in? Okfuskee
 - What city do you live in? Okemah
- This is a high traffic area. People walking south on Woody Guthrie, down the hill to Dollar General do not have shoulders or areas to walk. It is very dangerous when people are driving fast down the hill.
 - What county do you live in? Okfuskee
 - What city do you live in? Okemah
- This is an intersection used to access two different schools. There is a need for some type of traffic signal.
 - What county do you live in? Okfuskee
 - What city do you live in? Okemah
- There is no shoulder on Old State Highway 62. This makes it very difficult for pedestrians.
 - What county do you live in? Okfuskee
 - What city do you live in? Okemah
- This is a deadly intersection. Several fatalities over the last 15 years.
 - What county do you live in? Okmulgee
 - What city do you live in? Morris
- We have several accidents a year at these curves.



THE MUSCOGEE NATION

- What county do you live in? Okmulgee
 - What city do you live in? Morris
- Dangerous intersection – school-related traffic.
 - What county do you live in? Muskogee
 - What city do you live in? Muskogee
- Dangerous intersection – school-related traffic.
 - What county do you live in? Muskogee
 - What city do you live in? Muskogee
- Dangerous intersection – school-Hilldale School related traffic.
 - What county do you live in? Muskogee
 - What city do you live in? Muskogee
- Gets very congested with school-related traffic.
 - What county do you live in? Muskogee
 - What city do you live in? Muskogee
- Sidewalks needed.
 - What county do you live in? Muskogee
 - What city do you live in? Muskogee
- Pedestrian sidewalk needed.
 - What county do you live in? Muskogee
 - What city do you live in? Muskogee
- Access road too narrow and not adequate for amount of traffic.
 - What county do you live in? Muskogee
 - What city do you live in? Muskogee
- South and North Main St need traffic calming and improvements for pedestrians and bicyclists.
 - What county do you live in? Muskogee
 - What city do you live in? Muskogee
- Intersection is dangerous. Main Street needs a road diet.
 - What county do you live in? Muskogee
 - What city do you live in? Muskogee
- Dangerous intersection. Need road diet. Traffic too fast and not safe to walk
 - What county do you live in? Muskogee
 - What city do you live in? Muskogee
- Needs a sidewalk from public housing complex to Walmart shopping area.
 - What county do you live in? Muskogee
 - What city do you live in? Muskogee

Comment Cards and Helpline

Attendees were encouraged to fill out a comment card if they had a topic or problem area they wanted to introduce to the project team. They were also encouraged to utilize the helpline if needed. Overall, two (2) comment cards and ten (10) helpline inquiries were received. They are noted below.

Comment Cards

- Dangerous intersection, Highway 75 @ Preston Rd. (Will Sampson Rd.) There have been ??? crashes and a few deaths there. The land around the intersection has been purchased by the state preparing to construct an overpass there. A future concern is the traffic coming over the overpass and not slowing coming into Preston and a 3 way stop intersection.
- Crosswalk and lights needed in more areas in town. Southwest and Northwest side of town have no defined crossings. Kids walk north on Hwy 52 to go to Eagle Park (no sidewalks) (no pedestrian bridge).

Helpline

- 9/19/2024 blank voicemail was left and project team called back.
- 9/30/2024 blank voicemail was left and project team called back.
- 10/23/2024 blank voicemail was left and project team called back
- 10/28/2024 blank voicemail was left and project team called back.
- 11/5/2024 – Rebecca Walkup: Wondering if the safety data collected from the SS4A project for Muscogee County and the City of Muscogee can be shared with her. Project team shared the data.
- 11/6/2024 – Doug Walton: Question 16 on the survey doesn't include Muscogee County in the drop-down box. The survey closed on 11.7.2024.
- 11/6/2024 – Rebecca Walkup: Regarding Doug Walton's email, left voicemail to ask about survey question 16. The survey closed on 11.7.2024.
- 11/7/2024 – Courtney Graham: Executive Director of Main Street Muscogee. Thinks the SS4A program is wonderful and much needed for areas with roadway improvements. Would like to be included in discussion if downtown Muscogee is selected as a focus area and would like to help in any way they can when it comes to creating safer intersections for their community. Project team let her know the plan to have another set of meetings in March of 2025 and added her to the email list to receive information. Asked if she had a chance to complete the survey or leave any comments on the map.
- 11/11/2024 – Courtney Graham: Looking forward to March meetings and submitted comments via the map. Wondering if they went through. Project team verified all comments submitted have been approved.
- 11/14/2024 – Courtney Graham: Verified she seen her comment on the map now.

Thank you email

At the conclusion of these meetings, a thank you email was sent to the stakeholder contact list and the individuals who left an email address, either on the sign in sheets or on the comment cards. This message thanked attendees for their participation, provided transparency for each plan's development process, and reminded individuals to share feedback.

Learnings

Stakeholder meetings went well and were attended by many. Some public meetings did not occur as no community members were present. There are many factors that could have contributed to the low attendance, i.e., prior commitments, travel was too far, lack of interest, and the notification process. Possible ways to increase attendance would be to improve timeliness, multiple invitation touch points (reminders) at all levels, and outreach from the MCN website.

Key takeaways

- Send invitations 4 weeks out of the first set of meeting in March 2025
- Stakeholder attendance was decent; however, public meetings were not well attended
- Possibly combine the stakeholder and public meetings
- Add community pop-up events to public engagement to reach more community members
- Have only two (2) combined meetings with a virtual option
- Meetings can be scheduled later (6:00 p.m.) to get more public involvement
- Continue with newspaper ads and social media posts

Next Steps

The project team will finish analyzing the input received to incorporate into the plan. A second set of meetings is anticipated to happen in March of 2025. The priorities for each plan for the next set of meetings are listed below:

- Share the goal(s) for the Safety Action Plan
- Review the survey results and analysis
- Present high-risk locations and roadway conditions on those locations and infrastructure safety
- Review high-risk locations and driver-related issues
- Develop priorities and strategies
- Present the draft SS4A Plan and its elements

Appendix A: Invitation flyer

YOU ARE INVITED!



BACKGROUND:

Muscogee Creek Nation Department of Transportation was awarded a Safe Streets for All (SS4A) planning grant from the US Department of Transportation to create a roadway safety action plan following the principles of the Safe System Approach. The SS4A will identify projects and ways to reduce roadway fatalities and serious injuries within the Muscogee Creek Nation roadway network. Muscogee Creek Nation is hosting a series of twelve meetings to provide more insight for what the plan will entail and to gather feedback.

YOUR FEEDBACK WILL:



Create safer roads and mobility



Help reduce fatal and serious injury crashes to save lives



SCAN TO LEARN MORE & SHARE YOUR FEEDBACK!

MCSAFETY.COM

SAFE SYSTEM APPROACH:

**From the US Department of Transportation*



WHAT MEETING SHOULD I ATTEND?

STAKEHOLDERS:

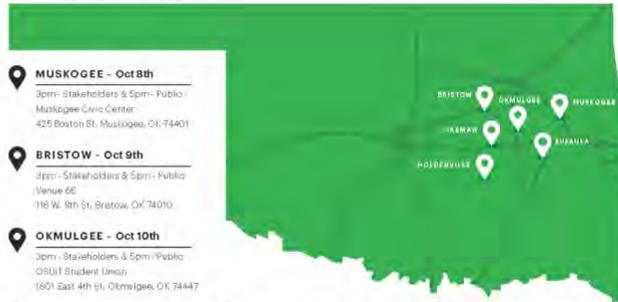
Government agencies, first responders, area schools, businesses, transportation groups, casinos, & planning organizations

PUBLIC:

Community members, citizens, & neighborhood groups

Food and refreshments provide by the Muscogee Nation to be served from 4pm to 5pm

MEETING SCHEDULE:



- MUSKOGEE - Oct 8th**
 3pm - Stakeholders & 5pm - Public
 Muskogee Civic Center
 425 Boston St, Muskogee, OK 74401
- BRISTOW - Oct 9th**
 3pm - Stakeholders & 5pm - Public
 Venue 66
 116 W. 9th St, Bristow, OK 74010
- OKMULGEE - Oct 10th**
 3pm - Stakeholders & 5pm - Public
 OSU Student Union
 1501 East 4th St, Okmulgee, OK 74447
- EUFAULA - Oct 22nd**
 3pm - Stakeholders & 5pm - Public
 Legacy on Main Street
 224 N. Main St, Eufaula, OK 74432
- OKEMAH - Oct 23rd**
 3pm - Stakeholders & 5pm - Public
 Oklahoma County Barn
 1201 E. Columbia, Okemah, OK 74859
- HOLDENVILLE - Oct 24th**
 3pm - Stakeholders & 5pm - Public
 Holdenville High School Cafeteria
 112 E 9th St, Holdenville, OK 74848

Appendix A: Figure 1 Flyer



THE MUSCOGEE NATION

Appendix B: Newspaper tear sheets

Page 2, Thursday, October 2, 2024

Exile

From Page One

venue since it began. He has been instrumental in bringing some of the highest-quality entertainment to the center with artists such as Michael Martin Murphy, Adele at the Walnut, David Phelps, Waco Fitzgibbon, Texas Phil, Tom Sizemore, Jessi Jo, Tom Pickett, Kyle Dillingham and so many more.

Promoting the arts through education was a big part of the original vision and staying true to that vision, students have had significant opportunities to watch alongside artistic professionals. This Symphony's Brave Suite, as well as Tulsa and an original musical with a well-known Broadway composer in June. Details on that and more will be released soon."

John The Foundland Center as they celebrate 15 years of live entertainment in Bristow, OK Saturday, October 5 with EXILE: A Million Miles Later. Tickets are available at www.ticketcity.com. Concert at 7:30 pm, doors open at 6:50 pm. Located just West of Tulsa, OK on I-44 and on historic Route 66.

Please visit www.foundlandcenter.org or call 918-637-3540 for more information.

In Cooperstown, "In addition to the excitement surrounding Exile coming to The Foundland, we are thrilled to once again have 'A Very Bristow Christmas' returning December 12, this year's theme is Polar Express. Our 2023 season is shaping up nicely with a cowboy concert coming in February

YOU'RE INVITED!

Help Make Our Streets Safer

Muscogee Creek Nation has received a federal grant through the Safe Streets and Roads for All (SS4A) program to reduce roadway fatalities and serious injuries—and we need your input! Join us at one of our upcoming public meetings to learn more and share your thoughts on improving transportation safety and accessibility for all.

Refer to the map and attend a meeting at a location of your choice! Refreshments will be served.

MUSKOGEE - OK 744
Open: Muskogee Civic Center
415 South 1st Street
Muskogee, OK 74401

WESTON - OK 744
Open: Community Center
101 N. 1st Street
Weston, OK 74402

OKEMUH - OK 744
Open: Okemuh Civic Center
101 N. 1st Street
Okemuh, OK 74402

OKEMUH - OK 744
Open: Okemuh Civic Center
101 N. 1st Street
Okemuh, OK 74402

BROKENVILLE - OK 744
Open: Brokenville Civic Center
101 N. 1st Street
Brokenville, OK 74402

WHAT MEETING SHOULD I ATTEND?
PRIORITY: Civilians, first responders, and school bus drivers, if transportation is your PRIORITY: Community members, citizens & neighborhood groups

SCAN TO LEARN MORE
HCHSAFETY.COM

THE MUSCOGEE NATION

H&H

Forestry Mulching & Land Clearing

FREE ESTIMATES

Shane (918) 814-3459 Bob (918) 284-0032

Subscribe to the
Bristow News
Call (918) 367-2282

**Don't Just Add Years to Your Life.
Add Life to Your Years.**

Embrace a healthier, fuller life with VIPcare.
Primary care for 65+.

vipcare

www.getvipcare.com

Schedule your appointment and start living your best life
(918) 731-3249

300 N Main St, Bristow, OK 74010

Appendix B: Figure 1 Bristow News Ad

Harvest Spoon Chili Festival 2024

A Day of Fun, Food and Festivities

BIN ADDICTS
BIN STORE 108 S. MORTON
OKMULGEE
Open Wednesday - Saturday
9 a.m. - 4 p.m.
Follow Bin Addicts on FB for more about the following events:

BEAR CATER
REOPEN

Get ready for a full day of excitement at the upcoming Harvest Spoon Chili Festival on Saturday, Oct. 12. With nearly 30 chili contestants, the event promises to bring the heat, with delicious tastings for only \$7. Cast your vote for the People's Choice.

Award and enjoy a day filled with live entertainment, family activities and more. Festivities kick off at 10 a.m. with live music from The Showstoppers of Okmulgee marching band and multiple performances by Will Huckabee. You can also enjoy performances by local truck ropers, a hot pepper eating contest and pumpkin chunking event. **BY GREG VORTAL, PAGE 43**

NEVER LEAVE A SPACE HEATER OR FIREPLACE UNATTENDED!

Walters
322 S. MUSCOGEE AVE. • OKMULGEE • 918-760-9827

2/3 of deaths occur in homes with rising or non-functioning smoke alarms.

East Central
FIRE SAFETY

Fairboard to meet Oct. 7

The Okmulgee County Fairboard will meet Monday, Oct. 7, at 7 p.m. at the OSU Extension Center.

1901 N. Oklahoma Ave. at the county fairgrounds. An agenda for the fairboard meeting will be as follows:

YOUR CAREER STARTS HERE
GET SKILLED. GET PAID. GO GREEN!
GREEN COUNTRY

- Call to Order
- Minutes
- Treasurer's Report
- New Business
- Recap of the 2024 Fall Fair-Open Forum
- Tim Taylor: FFA Banquet
- Brook Smith: Use of the Building
- Bill Francis: Green Country International
- Cleaning of Pans After the Fair
- Note to go into Executive Session: 25 OS 307 (h) (7) Discussing any matter whose disclosure of information would violate confidentiality requirements of state or federal law (Attorney Opinion: 79-80)
- Vote to come out of Executive Session
- Committee Reports
- OKSLS Report
- Adjourn

Luther's NEIGHBORHOOD Oktoberfest
Saturday, October 19 • 4 - 7 pm
HAVE FUN WITH Family & Friends
Kid's Games • Craft BEER • German Dinner
Free Hot Dog • Chips • Water
1314 East St. Okmulgee • 918-556-5948

Haggard Insurance, LLC
918-733-4501
212 S. Hughes Ave. - Morris

GET FREE SUPPORTIVE QUIT SERVICES FROM THE OKLAHOMA TOBACCO HELPLINE

Call 1-800-QUIT NOW
Text READY to 34191
Visit OKhelpline.com

1 800 QUIT NOW
Tobacco Quitline
www.quitnow.com

TSET
TOBACCO SETTLEMENT
COUNCIL OF OKLAHOMA

YOU'RE INVITED!

Help Make Our Streets Safer

Muscogee Creek Nation has received a federal grant through the Safe Streets and Roads for All (SS4A) program to reduce roadway fatalities and serious injuries—and we need your input! Join us at one of our upcoming public meetings to learn more and share your thoughts on improving transportation safety and accessibility for all.

Refer to the map and attend a meeting at a location of your choice! Refreshments will be served.

WHAT MEETING SHOULD I ATTEND?

SHAREHOLDERS: Government, law enforcers, drug retailers, businesses & transportation groups

FAMILY: Community members, citizens & neighborhood groups

SCAN TO LEARN MORE
MUSCOGEECREEKNATION.COM

THE MUSCOGEE NATION

Appendix B: Figure 3 Okmulgee Times Ad



Okemah Panthers Fall Short Against Stratford Bulldogs in Defensive Battle

OKEMAH, Ok.—The Okemah Panthers opened their district play under the Friday night lights at the Pease Field, sporting off against the undefeated Stratford Bulldogs. What unfolded was a close and hard-fought defensive struggle, decreasing both teams' confidence and determination.

The game kicked off with an early touch down when the Bulldogs leapt on their first series, allowing Panther safety Cameron Swayze to recover the ball and give Okemah a chance to capitalize. However, both defenses held strong throughout the first quarter, which ended in a run-of-the-minute.

The second quarter continued the defensive trend until the closing moments when the Panthers took the lead, 10-0, just seven seconds remaining in the half, quarterback Zane Rogers connected with Charley Barry III for a 27-yard touchdown pass. Fantasy Cline added the extra point, giving Okemah a 7-0 edge as they headed into halftime.

Despite the momentum, the

second half mirrored the first, with both teams struggling offensively to put together significant yardage. Okemah's offense found balance in the form of pass-the and fumble throughout the night, yet they held a 1-0 advantage in the third quarter. The Bulldogs' scoring drive was aided by two costly personal fouls from the Panthers, including a pivotal one on a fourth-and-20 situation that kept the drive alive. Although the Bulldogs converted on the touchdown, their two-point attempt failed when Cody Johnston intercepted a swinging pass play in the end zone. Following this, the scoreboard showed a narrow 7-6 lead by Okemah heading into the final quarter.

The anticipated fourth quarter was filled with tension as both defenses continued to play at an elite level. With just over three minutes left in the game, the Panthers recovered the ball but were unable to generate momentum, leading to a quick three-and-out. In a critical moment, the snap on a punt attempt sailed over punter Austin Dawson's head, resulting in a fumble scramble that ended with the Bulldogs recovering the ball in the end zone for a touch-



down. Following another failed two-point conversion, Stratford took the 12-7 lead with 3:10 remaining.

Facing a deficit, Okemah fought valiantly to mount a comeback, but the Panthers turned the ball over on downs deep in Bulldog territory, marked once more by a fumbled snap and holding penalty. Ultimately, Okemah's offense fell short, resulting in a disappointing 12-7 loss, dropping their record to 1-3, and 0-1 in district play.

Despite the setback, head coach E.L. Vick II has instilled a fierce competitive spirit in his team that

hasn't been seen in recent years. The team just needs to learn from their mistakes and develop the ability to win close games. The Panther defense remained a beacon of strength throughout the contest, anchored by standout performance from Cameron Swayze, who consistently made impactful plays. Taylor Cooper and Cody Johnston dogged the middle and helped keep the Bulldog offense at bay. Okemah's Jason Hensley and Kevon Jenkins continued to carry the workload for the pan-

thers from a making standpoint, with the two combining for the longest play from scrimmage, a success that Jenkins ran over the left side for a 26-yard gain. Eli Rogers was 2-2 for 27 yards passing, including the late Panther touchdown.

Looking ahead, the Panthers will travel to Frederick this week to face the 1-4 Bombers in search of their first district victory. The team remains focused on correcting errors and building on the competitive foundation established under Vick's leadership.

Okemah News Leader
(USPS #06-2008)
Published on Thursday
at 115 W. Broadway,
Okemah, OK 74659.
Postoffice postage paid
at Okemah, OK 74659.
POSTMASTER:
Send address changes to:
Okemah News Leader, P.O.
Box 19, Okemah, OK 74659.
935-423-0124.
E-mail:
oknews@oknewsleader.com
Published by
NEWS LEADER CO.,
Inc.
SUBSCRIPTION RATES:
In Okemah County by
mail \$35.50 monthly
subscriptions, \$15.00
of County in State, \$48.
Six months subscriptions,
\$21.00. Out of State, \$65.00
monthly subscriptions, \$23.
Over the counter individual
copy sales are 75¢.
Deadline Wednesday at 5 pm.

Okemah Band students in 400 member massed band



For the first time, the Okemah High School Panther Band had students participated in the Southeastern Okla. State Univ. Band Day in Durant.

They rehearsed with 400 band students from the college and other high schools, and then performed at halftime of the game with OHSU.

Participants were L-R: Jerry Landman, Cole Dawson, Chance Jones, Grant Davis, Anwarwan Yambili, Miron-Eliu Pkison, Bill Chaud, Malley Walker, and Jerry Cooper, Okemah HS Band Director.

YOU'RE INVITED!

Help Make Our Streets Safer

Muscogee Creek Nation has received a federal grant through the Safe Streets and Roads for All (SS4A) program to reduce roadway fatalities and serious injuries—and we need your input! Join us at one of our upcoming public meetings to learn more and share your thoughts on improving transportation safety and accessibility for all.

Refer to the map and attend a meeting at a location of your choice! Refreshments will be served.

- MOOREHEAD - All Day**
1000 North Main Street, Moorehead, OK 74351
- SHAWNEE - OHSU**
1000 North Main Street, Shawnee, OK 74801
- WARRICK - All Day**
1000 North Main Street, Warrick, OK 74880
- WARRICK - All Day**
1000 North Main Street, Warrick, OK 74880
- WARRICK - All Day**
1000 North Main Street, Warrick, OK 74880
- WARRICK - All Day**
1000 North Main Street, Warrick, OK 74880

WHAT MEETING SHOULD I ATTEND?

MEMBERSHIP: Government, fire, emergency, utility, business, & neighborhood groups.

PUBLIC: Community members, citizens, & neighborhood groups.

SCAN TO LEARN MORE
MCRNGPT.COM

GET FREE SUPPORTIVE QUIT SERVICES FROM THE OKLAHOMA TOBACCO HELPLINE

Call 1-800-QUIT NOW
Text READY to 34191
Visit OKhelpline.com

Oklahoma Tobacco Helpline
1 800 QUIT NOW
TSET
Tobacco Use Tax Exemption Trust

Appendix B: Figure 4 Okemah News Leader Ad

Muscogee Creek Nation Department of Transportation / Federal Roads
October 10

Come see us at 5pm if you have any road/safety concerns! We would love to hear about it.



YOU ARE INVITED!

BACKGROUND:
The US Department of Transportation awarded a Safe Streets for All (SS4A) planning grant from the US Department of Transportation to create a roadway safety action plan following the principles of the Safe System Approach. The SS4A will identify projects and ways to reduce roadway fatalities and serious injuries within the Muscogee Creek Nation roadway network. Muscogee Creek Nation is hosting a series of twelve meetings to provide more insight for what the plan will entail and to gather feedback.

SAFE SYSTEM APPROACH:
The SS4A will identify projects and ways to reduce roadway fatalities and serious injuries within the Muscogee Creek Nation roadway network. Muscogee Creek Nation is hosting a series of twelve meetings to provide more insight for what the plan will entail and to gather feedback.

WHAT MEETING SHOULD I ATTEND?
STAKEHOLDERS: Government agencies, first responders, area schools, businesses, transportation groups, citizens, A planning organizations.
PUBLIC: Community members, citizens, & neighborhood groups.

MEETING SCHEDULE:

- MEMPHIS - Oct 10**
- BRISTOW - Oct 11**
- OKLAHOMA CITY - Oct 12**
- OKLAHOMA CITY - Oct 13**
- OKLAHOMA CITY - Oct 14**
- OKLAHOMA CITY - Oct 15**
- OKLAHOMA CITY - Oct 16**
- OKLAHOMA CITY - Oct 17**
- OKLAHOMA CITY - Oct 18**
- OKLAHOMA CITY - Oct 19**
- OKLAHOMA CITY - Oct 20**
- OKLAHOMA CITY - Oct 21**

SCAN TO LEARN MORE & SHARE YOUR FEEDBACK!

3 likes 3 shares

Appendix C: Figure 3 MCN Department of Transportation Facebook post [LINK](#)

Muscogee Creek Nation Department of Transportation / Federal Roads
October 8

We will be in Bristow tomorrow at the Oklahoma Venue 66 for the Safe Streets for All meeting. If you have concerns about Safety on the Roads within The Muscogee Nation Reservation please come and tell us. We will have food at 4 public meeting at 5.

YOU ARE INVITED!

BACKGROUND:
Muscogee Creek Nation Department of Transportation was awarded a Safe Streets for All (SS4A) planning grant from the US Department of Transportation to create a roadway safety action plan following the principles of the Safe System Approach. The SS4A will identify projects and ways to reduce roadway fatalities and serious injuries within the Muscogee Creek Nation roadway network. Muscogee Creek Nation is hosting a series of twelve meetings to provide more insight for what the plan will entail and to gather feedback.

SAFE SYSTEM APPROACH:
The SS4A will identify projects and ways to reduce roadway fatalities and serious injuries within the Muscogee Creek Nation roadway network. Muscogee Creek Nation is hosting a series of twelve meetings to provide more insight for what the plan will entail and to gather feedback.

WHAT MEETING SHOULD I ATTEND?
STAKEHOLDERS: Government agencies, first responders, area schools, businesses, transportation groups, citizens, A planning organizations.
PUBLIC: Community members, citizens, & neighborhood groups.

MEETING SCHEDULE:

- MEMPHIS - Oct 10**
- BRISTOW - Oct 11**
- OKLAHOMA CITY - Oct 12**
- OKLAHOMA CITY - Oct 13**
- OKLAHOMA CITY - Oct 14**
- OKLAHOMA CITY - Oct 15**
- OKLAHOMA CITY - Oct 16**
- OKLAHOMA CITY - Oct 17**
- OKLAHOMA CITY - Oct 18**
- OKLAHOMA CITY - Oct 19**
- OKLAHOMA CITY - Oct 20**
- OKLAHOMA CITY - Oct 21**

YOUR FEEDBACK WILL:

- Create safer roads and mobility
- Help reduce fatal and serious injury crashes on your street

SCAN TO LEARN MORE & SHARE YOUR FEEDBACK!

Muscogee Creek Nation Department of Transportation / Federal Roads
October 2

We would like to invite you to the MCN DOT Safety Meetings!!

Stakeholders Meetings at 3pm
Food will be provided at 4 pm
Public Meetings at 5pm ... See more

Like Comment Share

Appendix C: Figure 4 MCN Department of Transportation Facebook post [LINK](#)

Muscogee Creek Nation Department of Transportation / Federal Roads
 October 2 · 🌐

📍 We would like to invite you to the MCN DOT Safety Meetings!!
 Stakeholders Meetings at 3pm
 Food will be provided at 4 pm
 Public Meetings at 5pm ... See more

YOU ARE INVITED! THE MUSCOGEE NATION

BACKGROUND:
 Muscogee Creek Nation Department of Transportation was awarded a Safe Streets for All (SS4A) planning grant from the US Department of Transportation to create a roadway safety action plan following the principles of the Safe System Approach. The SS4A will identify projects and ways to reduce roadway fatalities and serious injuries within the Muscogee Creek Nation roadway network. Muscogee Creek Nation is hosting a series of twelve meetings to provide more insight for what the plan will entail and to gather feedback.

SAFE SYSTEM APPROACH:
 A circular diagram showing five interconnected elements: Road, Vehicle, Driver, Environment, and Road User, all contributing to a central goal of 'SAFETY APPROACH'.

WHAT MEETING SHOULD I ATTEND?
STAKEHOLDERS: Government agencies, first responders, area schools, businesses, transportation groups, parents, & planning organizations
PUBLIC: Community members, citizens, & neighborhood groups

YOUR FEEDBACK WILL:
 Create safer roads and mobility
 Help reduce fatal and serious injury crashes to save lives

MEETING SCHEDULE:
MUSKOGEE - Oct 08
 1000 Chickasaw & State Street
 Muskogee, OK 74401
 9:00 AM - 12:00 PM
 907-693-1234

EUFULA - Oct 10
 1000 Chickasaw & State Street
 Eufaula, OK 74401
 9:00 AM - 12:00 PM
 907-693-1234

OKLAHAWA - Oct 10
 1000 Chickasaw & State Street
 Oklawaha, OK 74401
 9:00 AM - 12:00 PM
 907-693-1234

OKFUSKEE - Oct 10
 1000 Chickasaw & State Street
 Okfuskee, OK 74401
 9:00 AM - 12:00 PM
 907-693-1234

OKMULGEE - Oct 10
 1000 Chickasaw & State Street
 Okmulgee, OK 74401
 9:00 AM - 12:00 PM
 907-693-1234

OKEMAH - Oct 10
 1000 Chickasaw & State Street
 Okemah, OK 74401
 9:00 AM - 12:00 PM
 907-693-1234

HOLDENVILLE - Oct 10
 1000 Chickasaw & State Street
 Holdenville, OK 74401
 9:00 AM - 12:00 PM
 907-693-1234

FOOD WILL BE SERVED

3 20 shares

Appendix C: Figure 5 MCN Department of Transportation Facebook post [LINK](#)

Mvsokke Media · Follow
 October 3 · 🌐

The Muscogee (Creek) Nation Department of Transportation will host a series of meetings for the public and stakeholders to provide insight for what the plan will entail for the Safe Streets for all (SS4A) planning grant, as well as to gather feedback. The purpose is to create safer roads and to reduce fatal and serious vehicle accidents. Community members, Mvsokke citizens, local community groups, government agencies, and first responders are welcome.

Stakeholder meetings will take place at 3 p.m., public meetings will be held at 5 p.m. at each session. A full list of the meetings and addresses can be found below. The first meeting will take place Tuesday, Oct. 8 in Muskogee.

YOU ARE INVITED! THE MUSCOGEE NATION

BACKGROUND:
 Muscogee Creek Nation Department of Transportation was awarded a Safe Streets for All (SS4A) planning grant from the US Department of Transportation to create a roadway safety action plan following the principles of the Safe System Approach. The SS4A will identify projects and ways to reduce roadway fatalities and serious injuries within the Muscogee Creek Nation roadway network. Muscogee Creek Nation is hosting a series of twelve meetings to provide more insight for what the plan will entail and to gather feedback.

SAFE SYSTEM APPROACH:
 A circular diagram showing five interconnected elements: Road, Vehicle, Driver, Environment, and Road User, all contributing to a central goal of 'SAFETY APPROACH'.

WHAT MEETING SHOULD I ATTEND?
STAKEHOLDERS: Government agencies, first responders, area schools, businesses, transportation groups, parents, & planning organizations
PUBLIC: Community members, citizens, & neighborhood groups

YOUR FEEDBACK WILL:
 Create safer roads and mobility
 Help reduce fatal and serious injury crashes to save lives

MEETING SCHEDULE:
MUSKOGEE - Oct 08
 1000 Chickasaw & State Street
 Muskogee, OK 74401
 9:00 AM - 12:00 PM
 907-693-1234

EUFULA - Oct 10
 1000 Chickasaw & State Street
 Eufaula, OK 74401
 9:00 AM - 12:00 PM
 907-693-1234

OKLAHAWA - Oct 10
 1000 Chickasaw & State Street
 Oklawaha, OK 74401
 9:00 AM - 12:00 PM
 907-693-1234

OKFUSKEE - Oct 10
 1000 Chickasaw & State Street
 Okfuskee, OK 74401
 9:00 AM - 12:00 PM
 907-693-1234

OKMULGEE - Oct 10
 1000 Chickasaw & State Street
 Okmulgee, OK 74401
 9:00 AM - 12:00 PM
 907-693-1234

OKEMAH - Oct 10
 1000 Chickasaw & State Street
 Okemah, OK 74401
 9:00 AM - 12:00 PM
 907-693-1234

HOLDENVILLE - Oct 10
 1000 Chickasaw & State Street
 Holdenville, OK 74401
 9:00 AM - 12:00 PM
 907-693-1234

FOOD WILL BE SERVED @ 4pm

3 5 shares

Appendix C: Figure 6 Mvsokke Media Facebook post [LINK](#)

Appendix D: Comment cards

MUSCOGEE NATION ROADWAY SAFETY PLAN

 THE MUSCOGEE NATION

Please print your information below.

Name _____ Phone _____

Email _____

Address _____

**GET INVOLVED
& LEARN MORE!**

For more information, visit MCNSafety.com or scan the QR code. For help, call **(918) 236-7314**



Appendix D: Figure 1 Comment card template

Appendix E: Meeting boards



Safe Streets for All (SS4A) Plan

MEETING



SCAN TO LEARN MORE
& SHARE YOUR FEEDBACK!



Appendix E: Figure 1 Welcome board

SS4A Plan Background & Importance

SAFE STREETS FOR ALL
(SS4A) PLAN MEETING



BACKGROUND

The Muscogee Nation Department of Transportation was awarded a **Safe Streets for All (SS4A) planning grant** from the US Department of Transportation to create a roadway safety action plan.

GOAL

Identify projects and strategies to reduce roadway fatalities and serious injuries within the Muscogee Nation's roadway network.



WHY IS AN SS4A PLAN IMPORTANT?

-  Prevent serious injury & fatal crashes
-  Infrastructure improvements
-  Traffic management
-  Community engagement
-  Future funding for improvements

Appendix E: Figure 2 SS4A background and importance board

Appendix F: Photos



Appendix F: Figure 1 MCN welcome table at public meeting



Appendix F: Figure 2 Project team giving presentation at public meeting



Appendix F: Figure 3 Project team giving presentation at public meeting



Appendix F: Figure 4 Project team giving presentation at public meeting



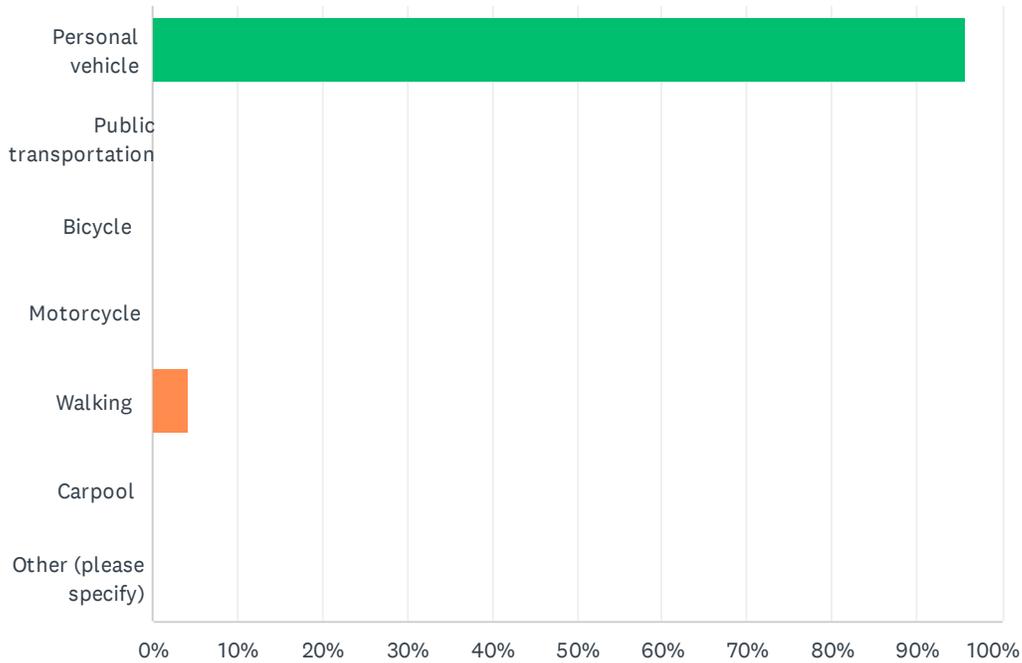
Appendix F: Figure 5 Project team giving presentation at public meeting



Appendix F: Figure 6 Project team giving presentation at public meeting

Q1 What is your primary mode of transportation?

Answered: 23 Skipped: 1

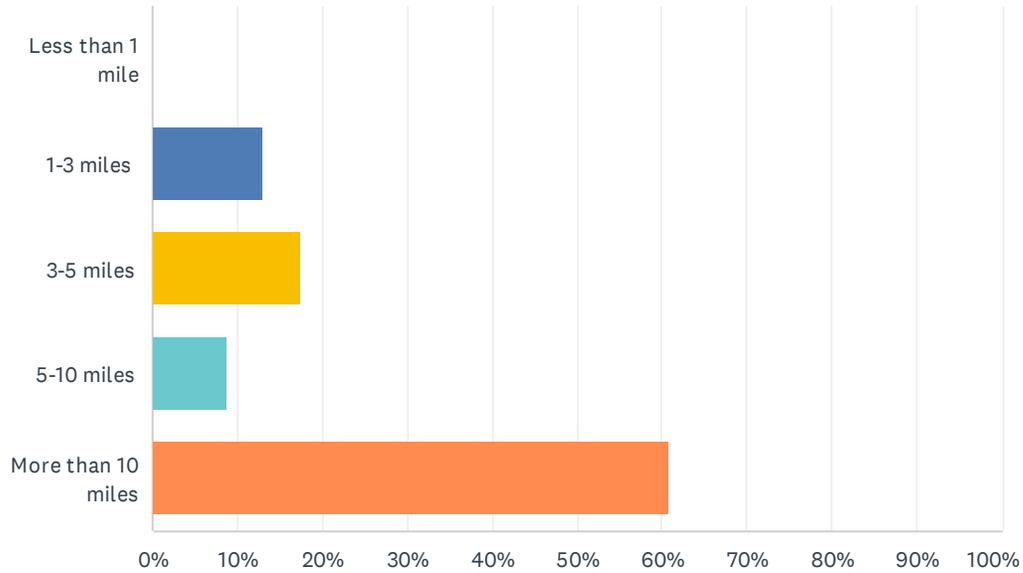


| ANSWER CHOICES | RESPONSES | |
|------------------------|-----------|-----------|
| Personal vehicle | 95.65% | 22 |
| Public transportation | 0.00% | 0 |
| Bicycle | 0.00% | 0 |
| Motorcycle | 0.00% | 0 |
| Walking | 4.35% | 1 |
| Carpool | 0.00% | 0 |
| Other (please specify) | 0.00% | 0 |
| TOTAL | | 23 |

| # | OTHER (PLEASE SPECIFY) | DATE |
|---|-------------------------|------|
| | There are no responses. | |

Q2 How many miles do you travel on an average day?

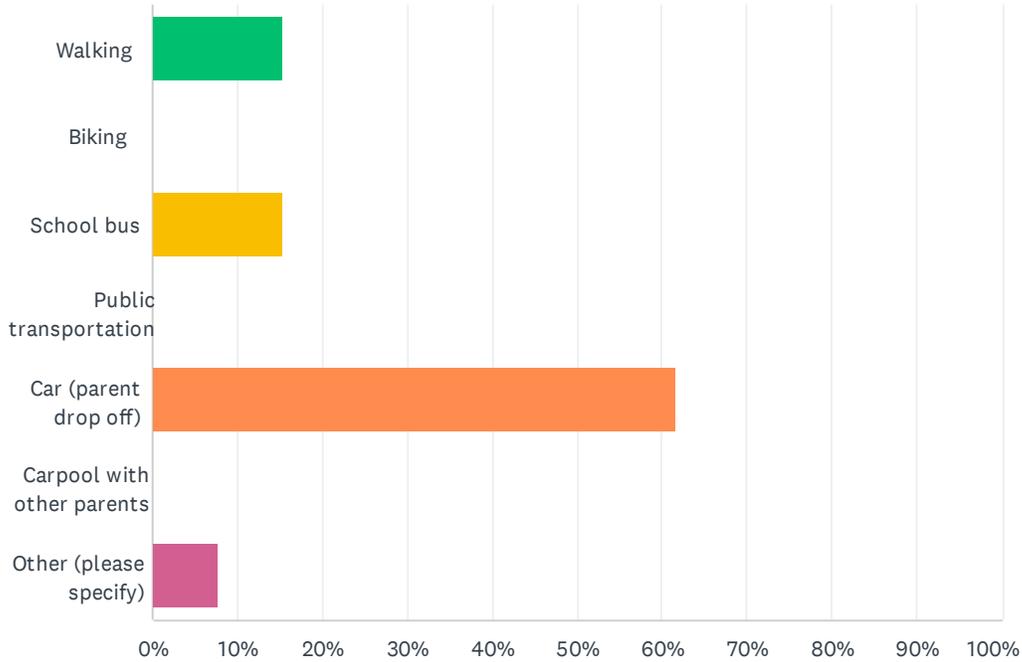
Answered: 23 Skipped: 1



| ANSWER CHOICES | RESPONSES |
|--------------------|-----------|
| Less than 1 mile | 0.00% 0 |
| 1-3 miles | 13.04% 3 |
| 3-5 miles | 17.39% 4 |
| 5-10 miles | 8.70% 2 |
| More than 10 miles | 60.87% 14 |
| TOTAL | 23 |

Q3 If you have children going to school, what is their mode of transportation to and from school?

Answered: 13 Skipped: 11

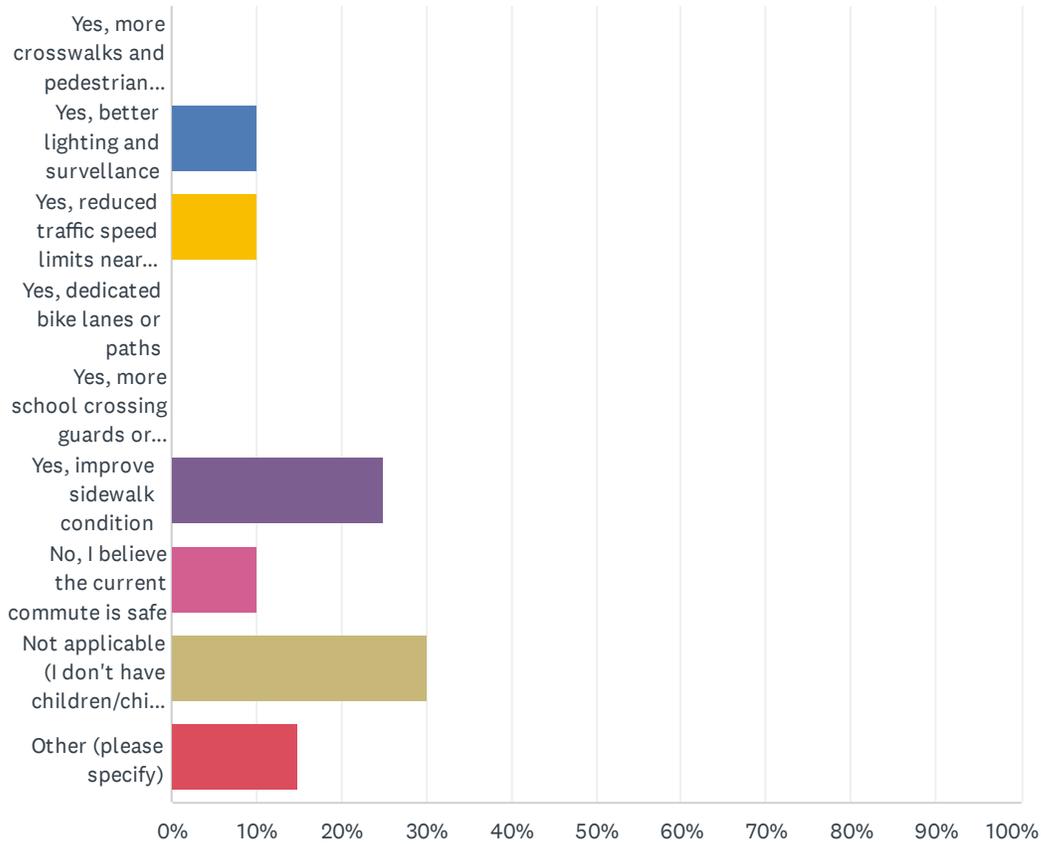


| ANSWER CHOICES | RESPONSES |
|----------------------------|-----------|
| Walking | 15.38% 2 |
| Biking | 0.00% 0 |
| School bus | 15.38% 2 |
| Public transportation | 0.00% 0 |
| Car (parent drop off) | 61.54% 8 |
| Carpool with other parents | 0.00% 0 |
| Other (please specify) | 7.69% 1 |
| TOTAL | 13 |

| # | OTHER (PLEASE SPECIFY) | DATE |
|---|------------------------|-------------------|
| 1 | Personal vehicle | 10/4/2024 8:40 AM |

Q4 Are there ways to make your children's commute to school safer?

Answered: 20 Skipped: 4



| ANSWER CHOICES | RESPONSES |
|---|-----------|
| Yes, more crosswalks and pedestrian signals | 0.00% 0 |
| Yes, better lighting and surveillance | 10.00% 2 |
| Yes, reduced traffic speed limits near schools | 10.00% 2 |
| Yes, dedicated bike lanes or paths | 0.00% 0 |
| Yes, more school crossing guards or volunteers | 0.00% 0 |
| Yes, improve sidewalk condition | 25.00% 5 |
| No, I believe the current commute is safe | 10.00% 2 |
| Not applicable (I don't have children/children in school) | 30.00% 6 |
| Other (please specify) | 15.00% 3 |
| TOTAL | 20 |

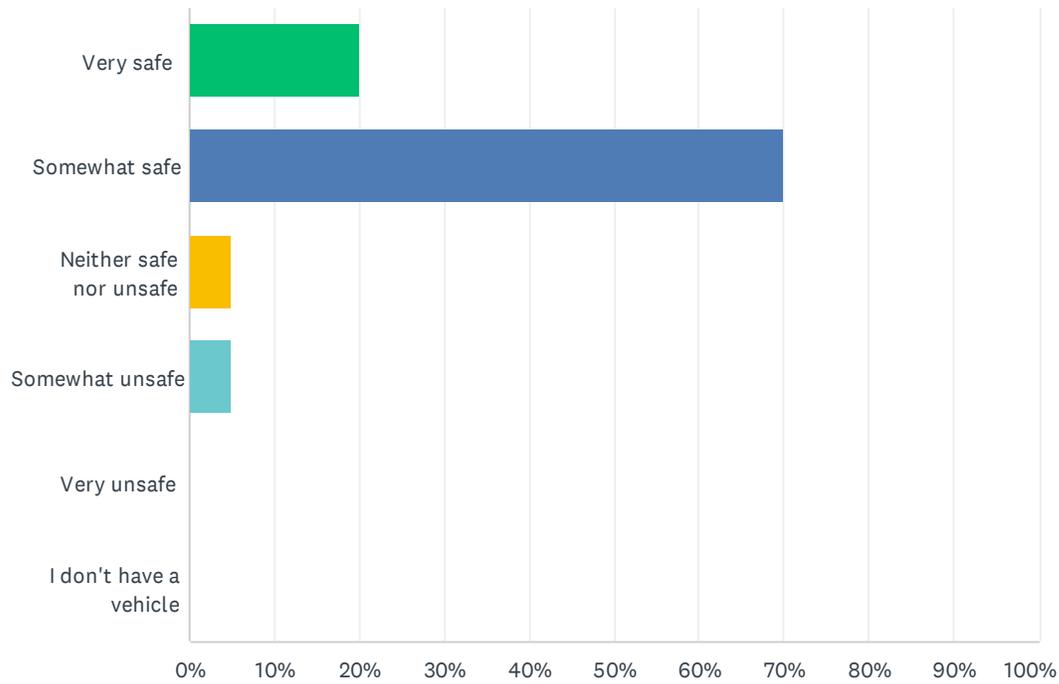
| # | OTHER (PLEASE SPECIFY) | DATE |
|---|------------------------|---------------------|
| 1 | school police officers | 10/31/2024 12:52 PM |

Muscogee Creek Nation Safe Streets for All - Safety Action Plan

| | | |
|---|---|--------------------|
| 2 | I'd pick two. sidewalk condition/crosswalks | 10/30/2024 7:17 AM |
| 3 | Widen Beman st in Oktaha and add a sidewalk | 10/8/2024 3:06 PM |

Q5 How safe do you feel while traveling in a vehicle?

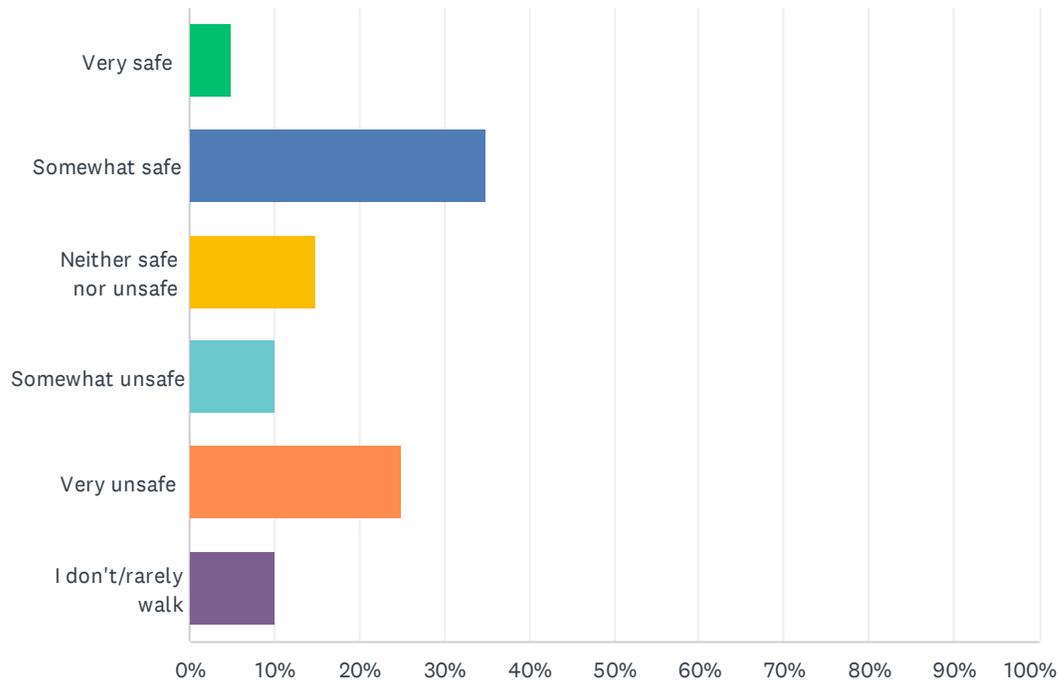
Answered: 20 Skipped: 4



| ANSWER CHOICES | RESPONSES | |
|-------------------------|-----------|-----------|
| Very safe | 20.00% | 4 |
| Somewhat safe | 70.00% | 14 |
| Neither safe nor unsafe | 5.00% | 1 |
| Somewhat unsafe | 5.00% | 1 |
| Very unsafe | 0.00% | 0 |
| I don't have a vehicle | 0.00% | 0 |
| TOTAL | | 20 |

Q6 How safe do you feel when walking?

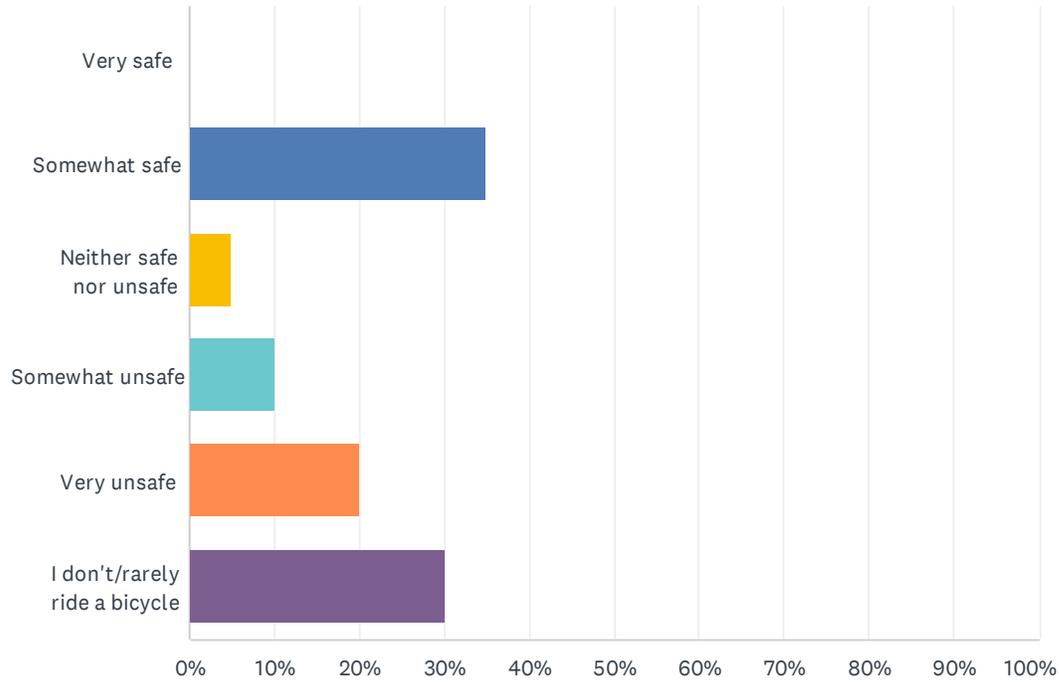
Answered: 20 Skipped: 4



| ANSWER CHOICES | RESPONSES |
|-------------------------|-----------|
| Very safe | 5.00% 1 |
| Somewhat safe | 35.00% 7 |
| Neither safe nor unsafe | 15.00% 3 |
| Somewhat unsafe | 10.00% 2 |
| Very unsafe | 25.00% 5 |
| I don't/rarely walk | 10.00% 2 |
| TOTAL | 20 |

Q7 How safe do you feel when riding a bicycle?

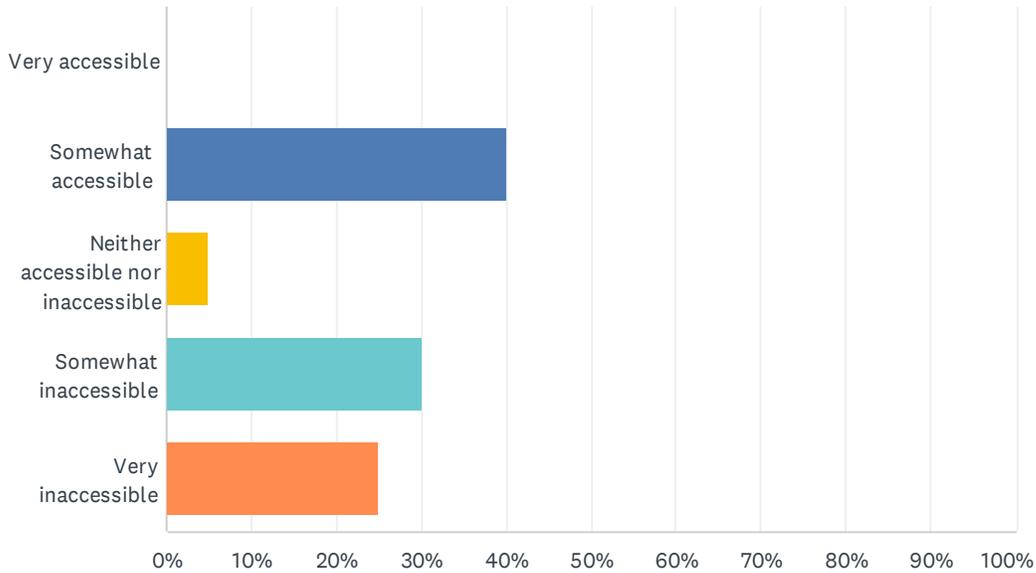
Answered: 20 Skipped: 4



| ANSWER CHOICES | RESPONSES | |
|-------------------------------|-----------|-----------|
| Very safe | 0.00% | 0 |
| Somewhat safe | 35.00% | 7 |
| Neither safe nor unsafe | 5.00% | 1 |
| Somewhat unsafe | 10.00% | 2 |
| Very unsafe | 20.00% | 4 |
| I don't/rarely ride a bicycle | 30.00% | 6 |
| TOTAL | | 20 |

Q8 How accessible do you feel the streets are for all users, including those with disabilities?

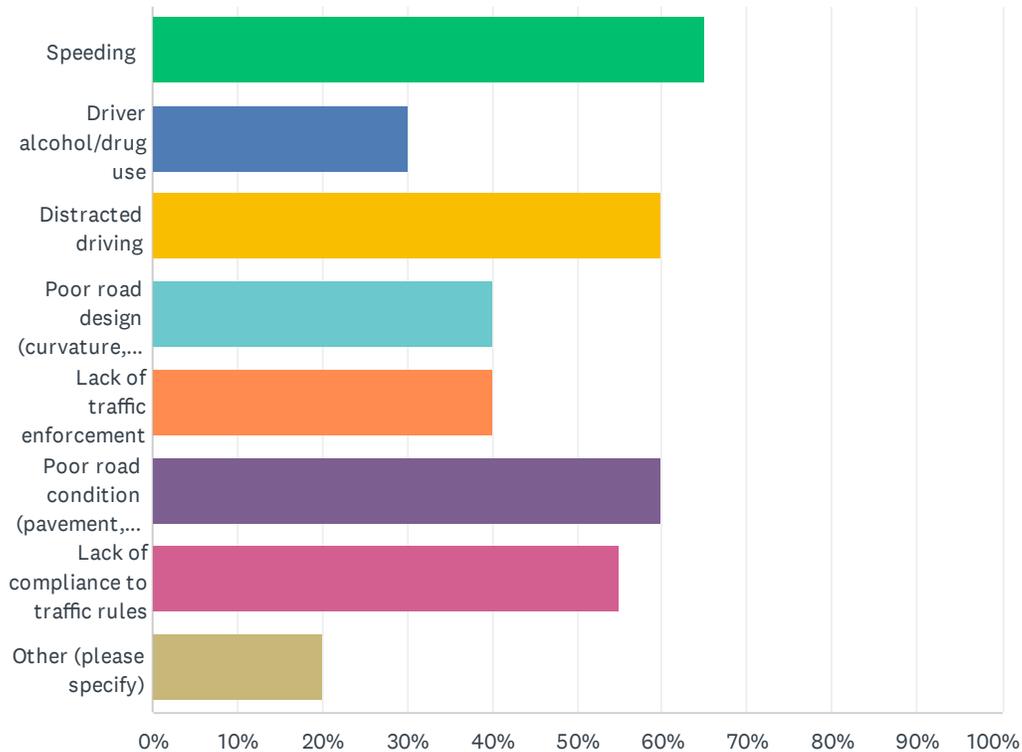
Answered: 20 Skipped: 4



| ANSWER CHOICES | RESPONSES | |
|-------------------------------------|-----------|-----------|
| Very accessible | 0.00% | 0 |
| Somewhat accessible | 40.00% | 8 |
| Neither accessible nor inaccessible | 5.00% | 1 |
| Somewhat inaccessible | 30.00% | 6 |
| Very inaccessible | 25.00% | 5 |
| TOTAL | | 20 |

Q9 What are the factors that negatively impact transportation safety in your community? (select all that apply)

Answered: 20 Skipped: 4

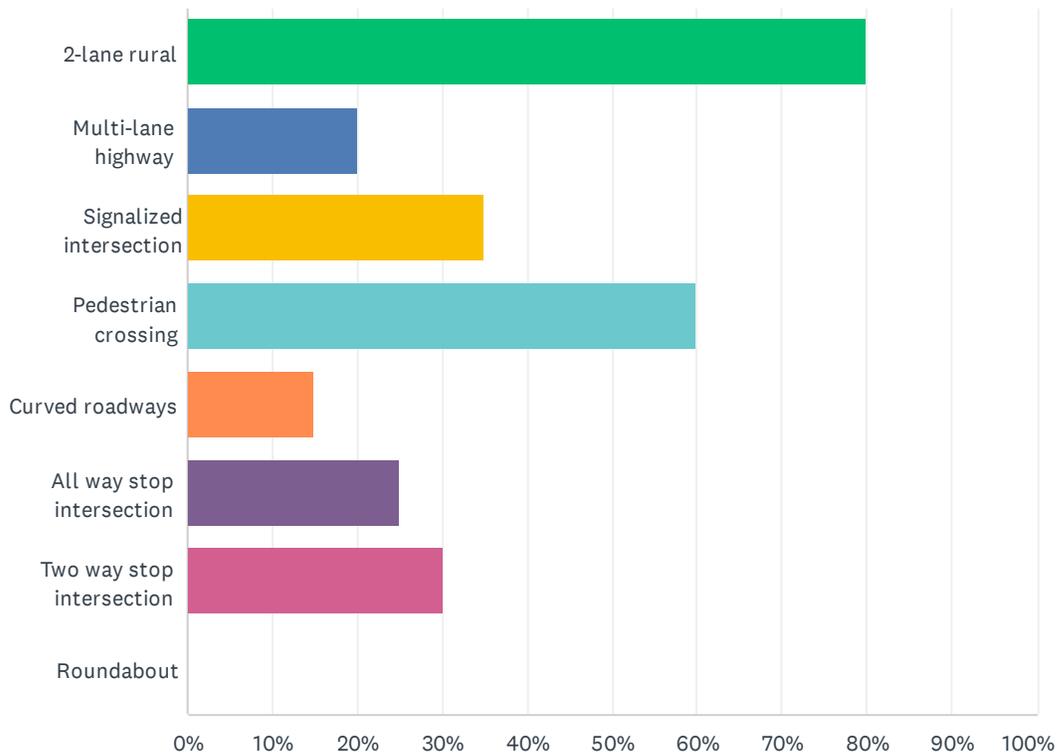


| ANSWER CHOICES | RESPONSES | |
|---|-----------|----|
| Speeding | 65.00% | 13 |
| Driver alcohol/drug use | 30.00% | 6 |
| Distracted driving | 60.00% | 12 |
| Poor road design (curvature, line of sight, etc.) | 40.00% | 8 |
| Lack of traffic enforcement | 40.00% | 8 |
| Poor road condition (pavement, weather, etc.) | 60.00% | 12 |
| Lack of compliance to traffic rules | 55.00% | 11 |
| Other (please specify) | 20.00% | 4 |
| Total Respondents: 20 | | |

| # | OTHER (PLEASE SPECIFY) | DATE |
|---|---|--------------------|
| 1 | lack of pedestrian, bicycle and public transit infrastructure | 11/5/2024 9:14 PM |
| 2 | Road conditions. Deterioration of roads | 11/1/2024 8:52 AM |
| 3 | Lack of sidewalks | 10/28/2024 9:22 AM |

Q10 Which intersection(s) or road segments do you believe need safety improvements in your community? (select all that apply)

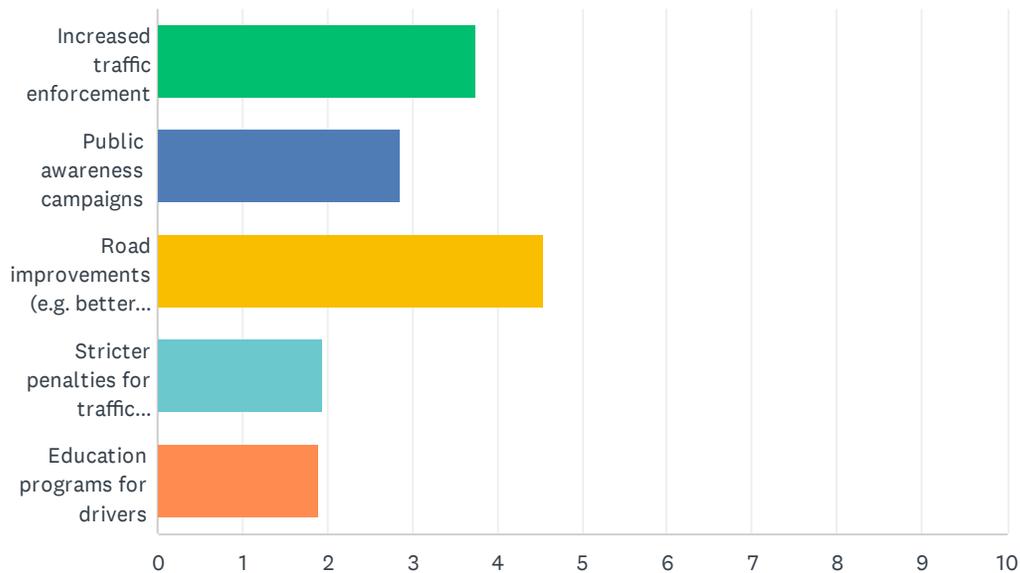
Answered: 20 Skipped: 4



| ANSWER CHOICES | RESPONSES | |
|---------------------------|-----------|----|
| 2-lane rural | 80.00% | 16 |
| Multi-lane highway | 20.00% | 4 |
| Signalized intersection | 35.00% | 7 |
| Pedestrian crossing | 60.00% | 12 |
| Curved roadways | 15.00% | 3 |
| All way stop intersection | 25.00% | 5 |
| Two way stop intersection | 30.00% | 6 |
| Roundabout | 0.00% | 0 |
| Total Respondents: 20 | | |

Q11 What types of improvements do you think are going to be most effective in improving transportation safety? Rank the following options from 1 to 5, with 1 being the most preferred and 5 being the least preferred.

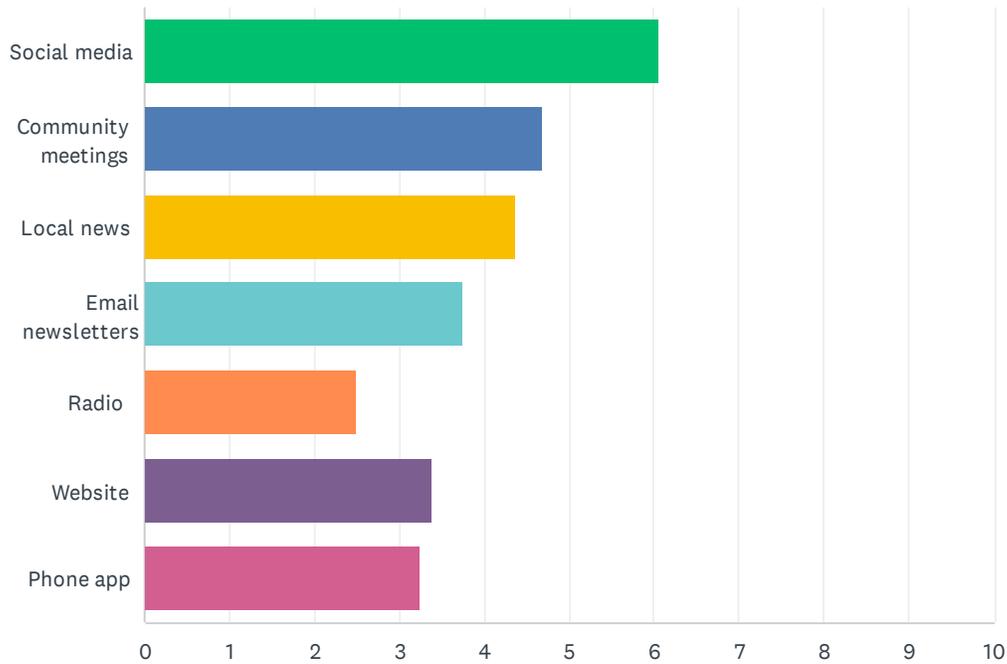
Answered: 20 Skipped: 4



| | 1 | 2 | 3 | 4 | 5 | TOTAL | SCORE |
|---|--------------|--------------|-------------|-------------|--------------|-------|-------|
| Increased traffic enforcement | 10.00% 2 | 60.00% 12 | 25.00% 5 | 5.00% 1 | 0.00% 0 | 20 | 3.75 |
| Public awareness campaigns | 15.00% 3 | 20.00% 4 | 20.00% 4 | 25.00% 5 | 20.00% 4 | 20 | 2.85 |
| Road improvements (e.g. better signage, lighting) | 75.00% 15 | 10.00% 2 | 10.00% 2 | 5.00% 1 | 0.00% 0 | 20 | 4.55 |
| Stricter penalties for traffic violations | 0.00% 0 | 0.00% 0 | 25.00% 5 | 45.00% 9 | 30.00% 6 | 20 | 1.95 |
| Education programs for drivers | 0.00% 0 | 10.00% 2 | 20.00% 4 | 20.00% 4 | 50.00% 10 | 20 | 1.90 |

Q12 How would you like local authorities to communicate traffic safety information to you? Rank the following options from 1 to 7, with 1 being the most preferred and 7 being the least preferred.

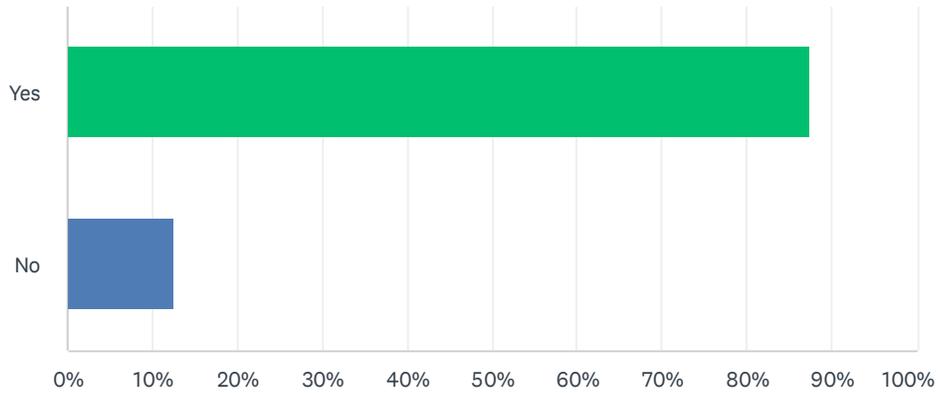
Answered: 16 Skipped: 8



| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | TOTAL | SCORE |
|--------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------|-------|
| Social media | 56.25% 9 | 18.75% 3 | 12.50% 2 | 6.25% 1 | 0.00% 0 | 6.25% 1 | 0.00% 0 | 16 | 6.06 |
| Community meetings | 18.75% 3 | 31.25% 5 | 12.50% 2 | 6.25% 1 | 12.50% 2 | 6.25% 1 | 12.50% 2 | 16 | 4.69 |
| Local news | 12.50% 2 | 18.75% 3 | 18.75% 3 | 18.75% 3 | 12.50% 2 | 12.50% 2 | 6.25% 1 | 16 | 4.38 |
| Email newsletters | 0.00% 0 | 12.50% 2 | 12.50% 2 | 31.25% 5 | 25.00% 4 | 18.75% 3 | 0.00% 0 | 16 | 3.75 |
| Radio | 0.00% 0 | 0.00% 0 | 12.50% 2 | 0.00% 0 | 31.25% 5 | 37.50% 6 | 18.75% 3 | 16 | 2.50 |
| Website | 6.25% 1 | 12.50% 2 | 6.25% 1 | 31.25% 5 | 0.00% 0 | 18.75% 3 | 25.00% 4 | 16 | 3.38 |
| Phone app | 6.25% 1 | 6.25% 1 | 25.00% 4 | 6.25% 1 | 18.75% 3 | 0.00% 0 | 37.50% 6 | 16 | 3.25 |

Q13 Do you think forming a committee to enhance existing efforts to make our roads safe would be a good idea?

Answered: 16 Skipped: 8



| ANSWER CHOICES | RESPONSES | |
|----------------|-----------|----|
| Yes | 87.50% | 14 |
| No | 12.50% | 2 |
| TOTAL | | 16 |

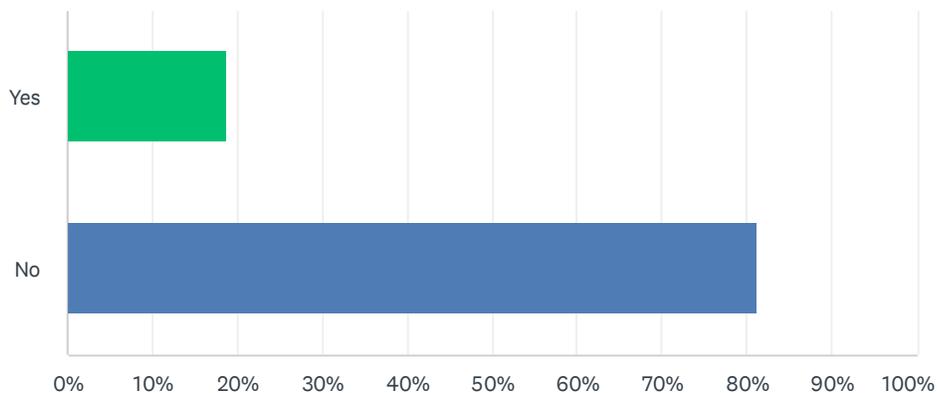
Q14 Do you have additional comments or suggestions for improving traffic safety in our community?

Answered: 9 Skipped: 15

| # | RESPONSES | DATE |
|---|---|--------------------|
| 1 | Thanks for all you do for the community! We appreciate it. | 11/6/2024 11:18 AM |
| 2 | More sidewalks so kids can walk safely to Muskogee High School, better drainage so roads don't flood and become undriveable (York Street especially), general repaving and sealing and fixing terrible potholes. I pay \$800 a year to fix my suspension and tires because of the terrible city streets in Muskogee, and my wheel shop told me it is specifically because of the potholes. I try to avoid them, but the roads just need repaving. | 11/6/2024 8:41 AM |
| 3 | While I no longer have school-age children living at home, it is very important that youth have the option and encouragement to safely and conveniently walk and bike to school. Also, people of all ages and abilities need the same options for getting to the places they need in their daily lives. | 11/5/2024 9:20 PM |
| 4 | Just need the money to enhance intersection / roadway safety | 11/1/2024 8:54 AM |
| 5 | More sidewalks and ped crossings on our two intersecting state highways in town | 10/30/2024 7:21 AM |
| 6 | We are all on enough committees. Better communication between partners, like today's mtg are great. It gets the process started. | 10/8/2024 3:54 PM |
| 7 | Law enforcement presence and engagement is key, as well as legislators at the state and Federal levels. | 10/4/2024 8:45 AM |
| 8 | no | 10/3/2024 2:12 PM |
| 9 | I have a concern about the four ways on Creek Street in Okmulgee by the Walmart. My son was hit by a car who ran that stop sign going north on creek st and 22nd while riding his bike and the lady was under the influence of drugs and alcohol when light horse finally showed up they gave her a ticket and wrote a sorry incident report and nothing was ever done. I would like to see that intersection surrounded by more lighting and watch for people who run that stop sign all the time and people speed through that area all the time coming off highway 75 to avoid the traffic lights on 21st and highway 75. Could you please look into getting more awareness in that area side streets especially when a lot of people walk those streets to get to Walmart. More sidewalks and stop sign restrictions. | 10/2/2024 3:04 PM |

Q15 Are you a Muscogee Creek Nation citizen?

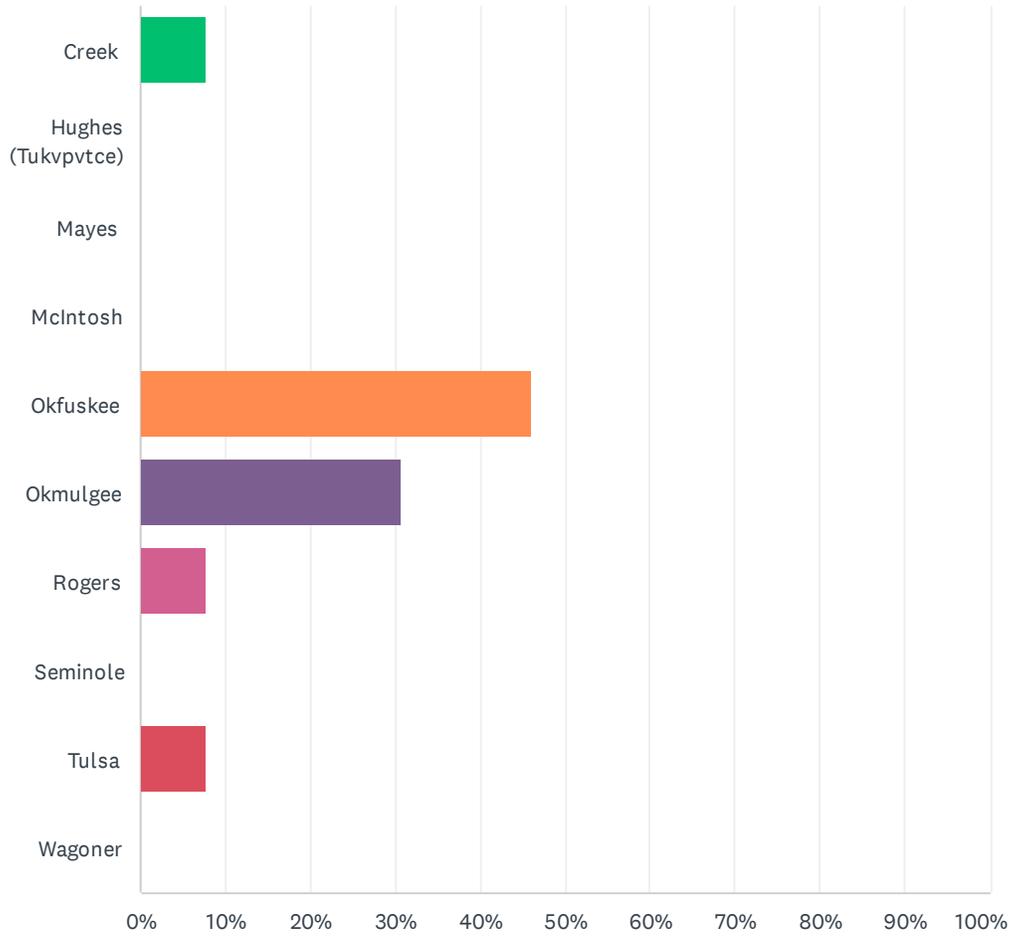
Answered: 16 Skipped: 8



| ANSWER CHOICES | RESPONSES | |
|----------------|-----------|----|
| Yes | 18.75% | 3 |
| No | 81.25% | 13 |
| TOTAL | | 16 |

Q16 What county do you live in?

Answered: 13 Skipped: 11



Muscogee Creek Nation Safe Streets for All - Safety Action Plan

| ANSWER CHOICES | RESPONSES | |
|-------------------|-----------|-----------|
| Creek | 7.69% | 1 |
| Hughes (Tukvptce) | 0.00% | 0 |
| Mayes | 0.00% | 0 |
| McIntosh | 0.00% | 0 |
| Okfuskee | 46.15% | 6 |
| Okmulgee | 30.77% | 4 |
| Rogers | 7.69% | 1 |
| Seminole | 0.00% | 0 |
| Tulsa | 7.69% | 1 |
| Wagoner | 0.00% | 0 |
| TOTAL | | 13 |

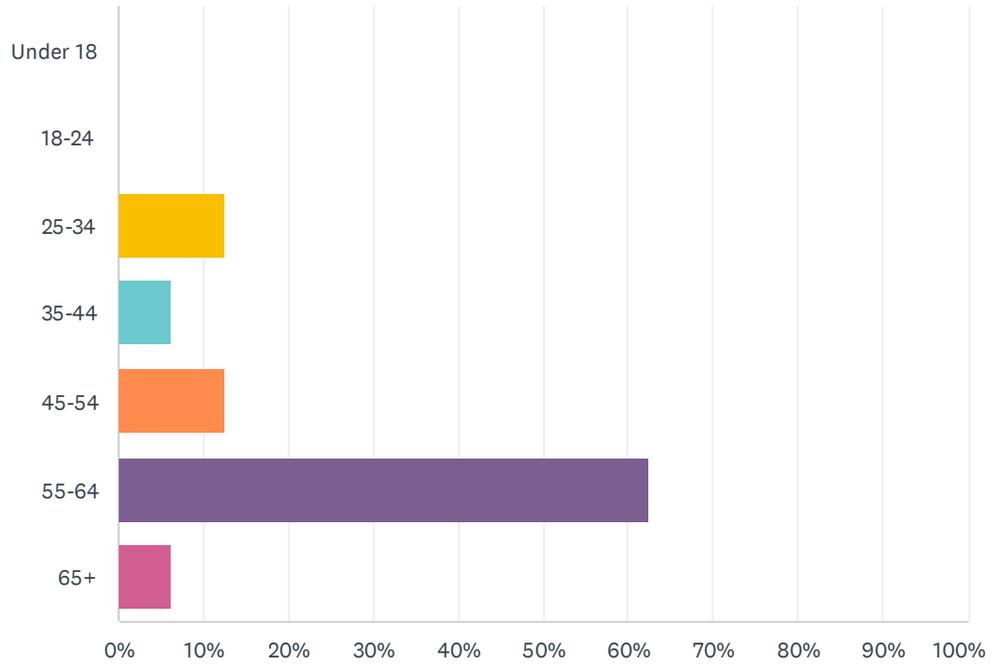
Q17 What city/town do you live in? (please specify)

Answered: 16 Skipped: 8

| # | RESPONSES | DATE |
|----|---|---------------------|
| 1 | Hulbert | 11/6/2024 11:19 AM |
| 2 | Muskogee (why isn't Muskogee County included in #16?) | 11/6/2024 8:42 AM |
| 3 | Muskogee | 11/5/2024 9:33 PM |
| 4 | Morris | 11/1/2024 8:55 AM |
| 5 | Okemah | 11/1/2024 8:18 AM |
| 6 | okemah | 10/31/2024 1:00 PM |
| 7 | Okemah | 10/31/2024 12:49 PM |
| 8 | Morris | 10/30/2024 7:22 AM |
| 9 | Okemah | 10/29/2024 2:40 PM |
| 10 | Weleetka | 10/24/2024 6:26 AM |
| 11 | Sapulpa | 10/9/2024 3:21 PM |
| 12 | Claremore | 10/8/2024 3:55 PM |
| 13 | Broken Arrow | 10/4/2024 8:46 AM |
| 14 | Okmulgee | 10/3/2024 2:12 PM |
| 15 | Okmulgee | 10/2/2024 3:04 PM |
| 16 | Okemah | 9/25/2024 3:20 PM |

Q18 What is your age?

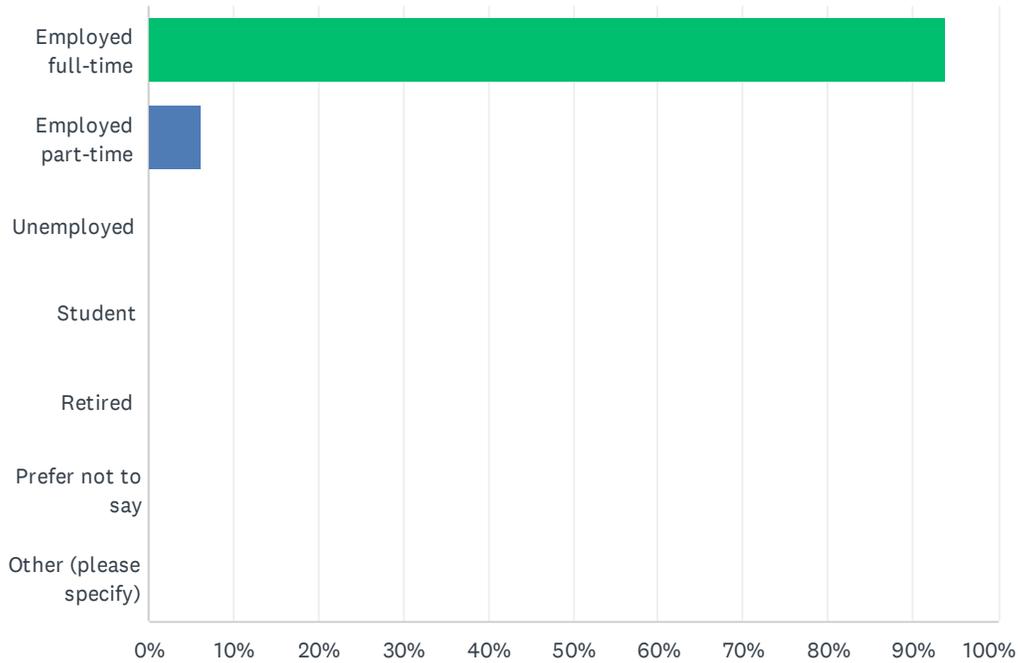
Answered: 16 Skipped: 8



| ANSWER CHOICES | RESPONSES | |
|----------------|-----------|-----------|
| Under 18 | 0.00% | 0 |
| 18-24 | 0.00% | 0 |
| 25-34 | 12.50% | 2 |
| 35-44 | 6.25% | 1 |
| 45-54 | 12.50% | 2 |
| 55-64 | 62.50% | 10 |
| 65+ | 6.25% | 1 |
| TOTAL | | 16 |

Q20 What is your employment status?

Answered: 16 Skipped: 8



| ANSWER CHOICES | RESPONSES | |
|------------------------|-----------|-----------|
| Employed full-time | 93.75% | 15 |
| Employed part-time | 6.25% | 1 |
| Unemployed | 0.00% | 0 |
| Student | 0.00% | 0 |
| Retired | 0.00% | 0 |
| Prefer not to say | 0.00% | 0 |
| Other (please specify) | 0.00% | 0 |
| TOTAL | | 16 |

| # | OTHER (PLEASE SPECIFY) | DATE |
|---|-------------------------|------|
| | There are no responses. | |

APPENDIX E

EXISTING PLANS AND DOCUMENT REVIEW ANALYSIS

Muscogee Creek Nation and Tribal Plans & Documents

MCN Long Range Transportation Plan - 2024

Summary: The MCN Long Range Transportation Plan (2024) prioritizes transportation safety by improving infrastructure, reducing traffic hazards, and strengthening public transit services. Through data-driven decision-making, intergovernmental collaboration, and long-term investment strategies, MCN aims to ensure a safer and more accessible transportation network for its citizens.

| Transportation Safety Issues | Safety Category | Safe System Principles | Alignment with SS4A Plan |
|---|---|------------------------|--------------------------|
| Develop a safe and efficient transportation network for MCN citizens | | | |
| Improve roads, bridges, and transit systems to reduce accident risks and ensure accessibility | Roadway Safety and Infrastructure | Safer Roads | X |
| Public Road Maintenance and Upgrades: Ensuring roads are in optimal condition to prevent traffic hazards | Roadway Safety and Infrastructure | Safer Roads | |
| Traffic Control and Signage: Installation of proper road markings, speed limit signs, and lighting for enhanced driver safety | Roadway Safety and Infrastructure | Safer Roads | X |
| Emergency Access Routes: Strengthening road networks to support emergency response and evacuation efforts | Roadway Safety and Infrastructure | Safer Roads | |
| MCN actively collects and analyzes crash data to determine high-risk areas for traffic incidents | Transportation Safety and Crash Data Analysis | Safer Roads | |
| Safety enhancements are prioritized in locations with a history of collisions, fatalities, and traffic congestion | Transportation Safety and Crash Data Analysis | Safer Roads | |
| Speed control measures, intersection redesigns, and improved pedestrian crossings are recommended based on data analysis | Transportation Safety and Crash Data Analysis | Safer Speeds | X |
| Expansion of the MCN Transit Program to provide safer, more reliable transportation options | Public Transit Safety Enhancements | Safer People | |
| Collaboration with Ki Bois Area Transit (KATS) to extend coverage in rural and underserved areas | Public Transit Safety Enhancements | Safer People | X |
| Implementation of ADA-compliant vehicles and stops to ensure accessibility for individuals with disabilities | Public Transit Safety Enhancements | Safer People | |
| Enhancements to school bus routes and public transit schedules to improve reliability and safety for daily commuters | Public Transit Safety Enhancements | Safer Roads | X |
| Development of walking trails and bike lanes to promote safe, alternative modes of transportation | Bicycle and Pedestrian Safety Initiatives | Safer People | X |
| Investments in pedestrian-friendly infrastructure, such as crosswalks, sidewalks, and street lighting | Bicycle and Pedestrian Safety Initiatives | Safer Roads | X |
| Coordination with public health programs to encourage safe outdoor mobility | Bicycle and Pedestrian Safety Initiatives | Safer People | |
| MCN Lighthorse Police plays a crucial role in traffic management, crash investigations, and roadway patrols | Emergency Response and Law Enforcement Coordination | Post Crash Care | |
| The MCN Emergency Management Department collaborates with local agencies for disaster preparedness and evacuation planning | Emergency Response and Law Enforcement Coordination | Post Crash Care | |

Muscogee Creek Nation and Tribal Plans & Documents

| | | | |
|---|---|-----------------|---|
| Enhanced coordination with county law enforcement and fire departments to facilitate rapid emergency response | Emergency Response and Law Enforcement Coordination | Post Crash Care | X |
| Bridge Replacement and Rehabilitation: Applications submitted under the Bipartisan Infrastructure Law (BIL) for funding | Future Safety-Focused Transportation Projects | Safer Roads | |
| Intersection Safety Upgrades: Realignment of high-risk intersections to reduce crash rates | Future Safety-Focused Transportation Projects | Safer Roads | |
| Expansion of Transit Services: Increased investment in public transportation to provide safer, more efficient mobility options | Future Safety-Focused Transportation Projects | Safer People | X |
| Smart Road Technology Integration: Use of real-time traffic monitoring, automated alerts, and digital signage to enhance safety | Future Safety-Focused Transportation Projects | Safer Roads | |

MCN Transportation Safety Update - 2022

Summary: The MCN Transportation Safety Plan is a dynamic document that evolves with changing safety needs, technological advancements, and infrastructure improvements. The Nation remains committed to reducing transportation-related injuries and fatalities through engineering, enforcement, education, and emergency response enhancements.

| Transportation Safety Issues | Safety Category | Safe System Principles | Alignment with SS4A Plan |
|--|---|------------------------|--------------------------|
| Low seatbelt use is a key concern. MCN collaborates with the Safe Kids Coalition to promote seatbelt and child safety seat use through education and enforcement campaigns | Public Education Safety Initiatives | Safer People | X |
| Alcohol-related crashes remain high among Native American populations - Oklahoma's ENDUI program and MCN's behavioral health services provide prevention and intervention programs | Public Education Initiatives | Safer People | |
| Distracted driving is a rising concern, with 620 crashes attributed to inattentiveness | Transportation Safety and Crash Data Analysis | | |
| Response times in rural areas remain a challenge. MCN is working to improve emergency response communication and GIS mapping of transportation networks | Emergency Response and Law Enforcement Coordination | Post Crash Care | |
| Crash analysis identified 37 pedestrian/bicycle crashes, often occurring in urban areas. Strategies include improved pedestrian infrastructure and driver education | Multiple | Safer Roads | |
| Teen drivers face heightened risks due to inexperience and distractions, while older drivers require infrastructure adjustments for safe navigation - MCN promotes driver education programs for both groups | Public Education Safety Initiatives | Safer People | X |
| Ninety-two animal-related crashes were recorded, with deer collisions being the most common. Awareness campaigns and roadway signage are proposed solutions | Multiple | Safer People | |
| Roadway Departures: These crashes represent 37.2% of all crashes but 55.1% of severe crashes, resulting in 44 fatalities. MCN is implementing countermeasures such as rumble strips and enhanced signage | Roadway Safety and Infrastructure | Safer Roads | X |

Muscogee Creek Nation and Tribal Plans & Documents

| | | | |
|---|-----------------------------------|-------------|--|
| Rollovers accounted for 163 crashes, with 11 fatalities. Road design improvements and better signage are recommended | Roadway Safety and Infrastructure | Safer Roads | |
| A total of 760 crashes involved collisions with objects like trees and utility poles. Strategies include hazard removal and enhanced roadside safety features | Roadway Safety and Infrastructure | Safer Roads | |
| Intersections account for 61.2% of total crashes and 12.3% of severe crashes. Rear-end/right-angle crashes are most common, with 18 fatalities recorded. MCN is conducting detailed intersection analyses to identify high-risk locations and implement engineering solutions | Roadway Safety and Infrastructure | Safer Roads | |

Muscogee Creek Nation Emergency Operation Plan - 2022

Summary: Transportation safety in the MCN EOP is a structured, multi-agency effort aimed at protecting citizens during disasters. The strategic deployment of transit resources, comprehensive coordination with emergency services, and interagency agreements ensure an effective response to emergencies requiring mass mobility. Regular updates and assessments help maintain readiness and improve the Nation's transportation resilience. The Memoranda of Understanding (MOUs) section in the Muscogee Creek Nation Emergency Operations Plan (MCN-EOP-2022) outlines several agreements designed to enhance emergency response and recovery efforts.

| Transportation Safety Issues | Safety Category | Safe System Principles | Alignment with SS4A Plan |
|---|---|------------------------|--------------------------|
| MCN relies on available transit resources, law enforcement, and emergency management officials to facilitate citizen movement in response to disasters | Public Transit Safety Enhancements | Safer Speeds | |
| Transportation safety efforts are enhanced through collaboration with multiple agencies (Lighthorse PD, Local Fire Departments, Bureau of Indian Affairs, FEMA, and Oklahoma Dept. of Emergency Mngt & Homeland Security) | Public Transit Safety Enhancements | | X |
| Memoranda of Understanding (MOUs) with neighboring jurisdictions and transit agencies ensure continued support and resource-sharing during large-scale incidents | Emergency Response and Law Enforcement Coordination | Post Crash Care | X |

Muscogee Nation Hazard Mitigation Plan Update - 2021

Summary: Transportation safety in the MCN Hazard Mitigation Plan is a multi-faceted effort that incorporates infrastructure improvements, emergency preparedness, and interagency coordination. By prioritizing resilient transportation networks and proactive planning, the MCN aims to enhance the safety and well-being of its citizens in the face of natural and human-made hazards.

| Transportation Safety Issues | Safety Category | Safe System Principles | Alignment with SS4A Plan |
|---|-----------------------------------|------------------------|--------------------------|
| Prioritizes improvements in infrastructure, collaboration with emergency agencies, and public safety measures to mitigate the impact of hazards on transportation | Roadway Safety and Infrastructure | Post Crash Care | |
| MCN is working to strengthen roads, bridges, and drainage systems to withstand extreme weather conditions | Roadway Safety and Infrastructure | Safer Roads | |

Muscogee Creek Nation and Tribal Plans & Documents

| | | | |
|---|---|--------------|---|
| Buses and emergency transport vehicles are being evaluated for disaster resilience, ensuring continued service during crises | Public Transit Safety Enhancements | Safer People | |
| MCN is identifying and reinforcing key evacuation routes to ensure they remain accessible in emergencies | Emergency Response and Law Enforcement Coordination | Safer People | |
| The plan includes strategies for road closures, detours, and alternative routes in case of hazards | Emergency Response and Law Enforcement Coordination | Safer People | |
| MCN works closely with County and State Transportation Agencies to maintain safe roadways and coordinate on infrastructure improvements | Roadway Safety and Infrastructure | Safer Roads | |
| MCN works closely with the Federal Emergency Management Agency (FEMA) for funding and guidance on transportation safety during disasters | Public Transit Safety Enhancements | Safer Roads | |
| MCN works closely with local Law Enforcement and Fire Departments to ensure smooth emergency evacuations and road safety measures | Emergency Response and Law Enforcement Coordination | Safer Speeds | |
| MCN works closely with neighboring tribal transit systems with agreements with Cherokee Transit and other agencies to help improve regional mobility and emergency response | Public Transit Safety Enhancements | Safer Speeds | |
| Future expansion of Tribal Transit Services to increase coverage to provide emergency transportation options for more citizens | Public Transit Safety Enhancements | Safer Speeds | |
| Future investing in road and bridge upgrades to withstand severe weather events | Roadway Safety and Infrastructure | Safer Roads | |
| Future enhanced public awareness programs to educate citizens on transportation safety measures during emergencies | Public Education Safety Initiatives | Safer People | X |

Options for Improving Transportation Safety in Tribal Areas - 2018

Summary: This report describes national trends, issues and options for addressing transportation safety topics. It also provides a list of areas to address in a safety plan for improving transportation safety. Actions can be taken to improve transportation safety and can be optimized when all safety professionals are working collaboratively with shared goals and strategies. Tribes can develop safety plans that examine crash history and establish communication links among all levels of government.

| Transportation Safety Issues | Safety Category | Safe System Principles | Alignment with SS4A Plan |
|---|---|------------------------|--------------------------|
| Establish data driven goals and implement strategies | Transportation Safety and Crash Data Analysis | Multiple | X |
| Develop and update safety plans | Multiple | Multiple | |
| Improve data collection and sharing | Transportation Safety and Crash Data Analysis | Multiple | X |
| Analyze crash data and contributing factors | Transportation Safety and Crash Data Analysis | Multiple | X |
| Improve usage rates | Emergency Response and Law Enforcement Coordination | Multiple | |
| Education and enforcement campaigns surrounding seatbelts, car seats, and helmets | Public Education Safety Initiatives | Safer People | X |

Muscogee Creek Nation and Tribal Plans & Documents

| | | | |
|---|---|-----------------|---|
| Pursue primary seatbelt law | Emergency Response and Law Enforcement Coordination | | |
| Keep vehicles in there lane of travel and minimize crash severity if the vehicle does leave it's lane of travel | Roadway Safety and Infrastructure | Safer Roads | |
| Install warning signs, road surface friction treatments, rumble strips, and maintain the roadways surface | Roadway Safety and Infrastructure | Safer Roads | X |
| Flaten roadway slops, remove hazardous roadside objects, and update or install guardrail/barriers | Roadway Safety and Infrastructure | Safer People | |
| Enforce existing impaired driving laws with properly trained law enforcement staff | Emergency Response and Law Enforcement Coordination | | X |
| Coordinate and publicize education and enforcement campaigns | Public Education Safety Initiatives | Safer People | |
| Provide alternatives to driving/walking surrounding drinking establishments | Public Transit Safety Enhancements | Safer People | X |
| Provide safe infrastructure for walking, e.g. adequate walking paths, lighting, eliminate pedestrian hazards | Bicycle and Pedestrian Safety Initiatives | Safer Roads | X |
| Minimize exposure when crossing roadways and increase education on pedestrian safety | Bicycle and Pedestrian Safety Initiatives | Safer People | |
| Optimize crash response times | Emergency Response and Law Enforcement Coordination | Post Crash Care | X |
| Provide medical training for law enforcement and volunteers | Emergency Response and Law Enforcement Coordination | Post Crash Care | |
| Provide training in basic incident management and collect performance measures | Emergency Response and Law Enforcement Coordination | Post Crash Care | |
| Assess communication protocols to optimize needs | Emergency Response and Law Enforcement Coordination | Post Crash Care | |

Tribal Transportation Strategic Safety Plan - 2017

Summary: A Strategic Transportation Safety Plan should identify problems and guide a collaborative effort toward addressing the high-risk attributes of transportation infrastructure, human behavior, and vehicles. This Tribal Transportation Strategic Safety Plan offers an assessment of transportation safety needs in tribal areas and provides tribal governments with strategies and resources that can be utilized in the pursuit of saving lives.

| Transportation Safey Issues | Safety Category | Safe System Principles | Alignment with SS4A Plan |
|--|---|------------------------|--------------------------|
| Transportation safety plans require a collaborative and cyclical approach including engaging stakeholders, analyzing crash data, implementing safety measures, and evaluating outcomes | Multiple | Multiple | |
| Improved, accurate and comprehensive crash data collection is essential for planning safety interventions | Transportation Safety and Crash Data Analysis | Multiple | X |
| Enforce seat belt and child safety seat laws, conduct seat belt usage education campaigns and establish child safety seat inspection stations | Multiple | Safer People | |
| Install rumble strips and guardrails, enhance road markings and warning signs, implement better roadway lighting and visibility measures | Roadway Safety and Infrastructure | Safer Roads | X |

Muscogee Creek Nation and Tribal Plans & Documents

| | | | |
|--|---|-----------------|---|
| Implement sobriety checkpoints, expand community education and alternative transportation options | Emergency Response and Law Enforcement Coordination | Safer People | |
| Improve pedestrian pathways and crosswalks, increase road lighting and educate both pedestrians and drivers about safe practices | Roadway Safety and Infrastructure | Safer Roads | X |
| Enhance training for law enforcement in emergency medical response and improve dispatch & communication systems | Emergency Response and Law Enforcement Coordination | Post Crash Care | |
| Increase the availability of air ambulance services and medical facilities | Emergency Response and Law Enforcement Coordination | Post Crash Care | |
| Speed limit enforcement and traffic calming measures | Multiple | Safer Roads | X |
| Public awareness campaigns on the dangers of texting while driving | Public Education Safety Initiatives | Safer People | |
| Graduated licensing programs for young drivers and educational initiatives on safe driving for older adults | Public Education Safety Initiatives | Safer People | X |
| Develop off-road vehicle safety guidelines | Multiple | Safer People | |
| Install wildlife crossings and fencing to reduce animal-related accidents | Roadway Safety and Infrastructure | Safer Roads | |

Tribal Governments & Transportation Safety Data - 2016

Summary: Improving transportation safety for tribal communities requires a comprehensive approach, including better crash data collection, enhanced collaboration between agencies, increased use of technology, and expanded funding opportunities. By addressing these key challenges, the federal government and tribal nations can work together to reduce traffic fatalities and injuries in tribal areas, ultimately creating safer transportation systems for American Indian/Alaska Native (AI/AN) populations.

| Transportation Safety Issues | Safety Category | Safe System Principles | Alignment with SS4A Plan |
|---|---|------------------------|--------------------------|
| Challenges: Underreported crash data, lack of standardized data collection and limited access to federal and state funding due to poor/incomplete data reporting | Transportation Safety and Crash Data Analysis | | X |
| Recommendations: | | | |
| Enhance crash data quality - Encourage the use of Model Minimum Uniform Crash Criteria (MMUCC) to standardize crash reports across tribal, state, and federal agencies | Transportation Safety and Crash Data Analysis | Multiple | |
| Encourage the use of Model Minimum Uniform Crash Criteria (MMUCC) to standardize crash reports across tribal, state, and federal agencies | Transportation Safety and Crash Data Analysis | Multiple | |
| Establish training programs for tribal law enforcement to improve crash reporting accuracy and completeness | Transportation Safety and Crash Data Analysis | Safer People | |
| Improve data sharing and integration: | | | |
| Develop partnerships between the Federal Highway Administration (FHWA), National Highway Traffic Safety Administration (NHTSA), and Bureau of Indian Affairs (BIA) to integrate tribal crash data into national databases | Transportation Safety and Crash Data Analysis | Multiple | |
| Create a centralized crash data clearinghouse to facilitate information sharing between tribal, state, and federal authorities | Transportation Safety and Crash Data Analysis | Multiple | |

Muscogee Creek Nation and Tribal Plans & Documents

| | | | |
|---|---|------------------------|--------------------------|
| Expand technology use: | | | |
| Implement Geographic Information System (GIS) mapping to improve crash location tracking and safety analysis | Transportation Safety and Crash Data Analysis | Post Crash Care | |
| Encourage the use of electronic crash reporting systems to replace paper-based reports and improve data accuracy | Transportation Safety and Crash Data Analysis | Post Crash Care | |
| Enhance funding opportunities: | | | |
| Ensure tribes can access Tribal Transportation Program Safety Funds (TTP Safety Funds) by allowing applications using alternative safety data sources | Multiple | | |
| Provide technical assistance to tribes in applying for state and federal grants | Multiple | | X |
| Strengthen law enforcement collaboration: | | | |
| Develop Memorandums of Understanding (MOUs) between tribal and state law enforcement agencies to facilitate data sharing | Transportation Safety and Crash Data Analysis | | |
| Provide training for tribal police on crash investigation and reporting best practices | Emergency Response and Law Enforcement Coordination | Post Crash Care | |
| Muscogee Creek Nation Strategic Transportation Plan - 2014 | | | |
| <p>Summary: The MCN Long Range Transportation Plan (2014) prioritizes transportation safety by improving infrastructure, reducing traffic hazards, and strengthening public transit services. Through data-driven decision-making, intergovernmental collaboration, and long-term investment strategies, MCN aims to ensure a safer and more accessible transportation network for its citizens.</p> | | | |
| Transportation Safety Issues | Safety Category | Safe System Principles | Alignment with SS4A Plan |
| Key safety issues identified: | | | |
| High incidence of vehicle-related accidents within MCN jurisdiction | Transportation Safety and Crash Data Analysis | | |
| Poor road maintenance and infrastructure deficiencies contribute to safety risks | Roadway Safety and Infrastructure | Safer Roads | |
| Speeding, impaired driving, and lack of seatbelt usage are significant concerns | Emergency Response and Law Enforcement Coordination | Safer People | |
| Inadequate facilities and infrastructure pose risks to non-motorized users | Bicycle and Pedestrian Safety Initiatives | Safer Roads | X |
| Limited emergency medical services (EMS) and response times need improvement | Emergency Response and Law Enforcement Coordination | Post Crash Care | |
| Strategic Goals and Objectives: | | | |
| Improve roadway infrastructure, enhance law enforcement and public awareness, promote safe driving practices, improve emergency response times, and develop non-motorized transportation facilities | Multiple | Post Crash Care | X |
| Recommended actions and implementation strategies: | | | |
| Resurfacing roads, improving intersections, and installing traffic control devices | Roadway Safety and Infrastructure | Safer Roads | X |
| Public education campaigns focusing on safe driving habits | Public Education Safety Initiatives | Safer People | X |

Muscogee Creek Nation and Tribal Plans & Documents

| | | | |
|--|---|-----------------|---|
| Increasing patrols and enforcement of DUI and speeding violations | Emergency Response and Law Enforcement Coordination | Safer Speeds | X |
| Establishing a system for tracking accidents and identifying high-risk areas | Transportation Safety and Crash Data Analysis | | |
| Engaging local, state, and federal agencies for funding and technical assistance | Future Safety-Focused Transportation Projects | | |
| Performance metrics and evaluation: | | | |
| Measure the reduction in accident rates and fatalities | Transportation Safety and Crash Data Analysis | Multiple | |
| Improvements in road conditions and signage | Roadway Safety and Infrastructure | Safer Roads | X |
| Increased compliance with the seatbelt and DUI laws | Emergency Response and Law Enforcement Coordination | Safer People | |
| Enhanced EMS response times | Emergency Response and Law Enforcement Coordination | Post Crash Care | X |

Muscogee Creek Nation Title 22: Health and Safety - 2007

Summary: Title 22: Health and Safety consists of chapters 1-9. Chapter 1 is the Traffic Code describing traffic laws such as speeding, reckless driving, and failure to yield to the right of way on Muscogee Creek Nation territory, enforced by Lighthorse Law Enforcement. Chapter 2 deals with public safety and disorderly conduct and property forfeiture violations.

| Transportation Safety Issues | Safety Category | Safe System Principles | Alignment with SS4A Plan |
|--|---|------------------------|--------------------------|
| Chapter 1: Traffic Code Laws, i.e., speeding, reckless driving, failure to yield to right of way | Emergency Response and Law Enforcement Coordination | | |

Safe Routes to School in Tribal Communities

Summary: The Safe Routes to School initiative in Tribal Communities is a vital program that enhances transportation safety, public health, and environmental sustainability. By addressing infrastructure deficiencies, engaging communities, and leveraging funding opportunities, tribal nations can create safer and healthier school commutes for children while strengthening community connections.

| Transportation Safety Issues | Safety Category | Safe System Principles | Alignment with SS4A Plan |
|--|---|------------------------|--------------------------|
| Encourages walking and bicycling as safe and viable options for students | Bicycle and Pedestrian Safety Initiatives | Safer People | |
| Improves traffic safety around schools by enhancing infrastructure such as crosswalks and bike lanes | Bicycle and Pedestrian Safety Initiatives | Safer Roads | X |
| Lack sidewalks or bike lanes, and have high-speed roads without adequate traffic controls | Bicycle and Pedestrian Safety Initiatives | Safer Roads | |
| Pedestrian and Bicycle Paths: Development of dedicated lanes and trails for safer travel | Bicycle and Pedestrian Safety Initiatives | Safer Roads | |
| Traffic Control Measures: Installation of crosswalks, pedestrian signals, speed bumps, and roundabouts to slow down traffic near schools | Roadway Safety and Infrastructure | Safer Roads | X |

Muscogee Creek Nation and Tribal Plans & Documents

| | | | |
|---|---|--------------|---|
| Improved Lighting: Increased street lighting in school zones to enhance visibility and safety | Roadway Safety and Infrastructure | Safer Roads | X |
| Signage and Road Markings: Clear, multilingual signage to guide students and drivers in school zones | Roadway Safety and Infrastructure | Safer Roads | |
| Programmatic Initiatives: Remote drop-off programs, traffic enforcement and speed reduction, community engagement & education | Bicycle and Pedestrian Safety Initiatives | Safer People | X |

Oklahoma Statewide Plans & Documents

Oklahoma Triennial Highway Safety Plan - 2024

Summary: The Oklahoma Triennial Highway Safety Plan (FY2024-FY2026) outlines a comprehensive and proactive approach to improving road safety. By leveraging enforcement, education, engineering, and emergency response strategies, the plan aims to make Oklahoma's roadways safer for all users. Through ongoing collaboration and data-driven interventions, the state is committed to reducing traffic-related fatalities and injuries in the coming years.

| Transportation Safety Issues | Safety Category | Safe System Principles | Alignment with SS4A Plan |
|--|---|------------------------|--------------------------|
| High-Visibility Enforcement (HVE): Sobriety checkpoints and saturation patrols targeting impaired drivers | Emergency Response and Law Enforcement Coordination | | X |
| Public Education and Awareness: Campaigns such as "ENDUI" to inform the public about the dangers of impaired driving | Public Education Safety Initiatives | Safer People | |
| Judicial and Law Enforcement Training: Specialized programs to improve DUI enforcement and prosecution effectiveness | Future Safety-Focused Transportation Projects | | |
| Improved Drug and Alcohol Testing: Enhanced laboratory capabilities for accurate detection and processing of DUI cases | Future Safety-Focused Transportation Projects | | |
| Seat Belt Enforcement Campaigns: Programs like "Click It or Ticket" to increase compliance | Emergency Response and Law Enforcement Coordination | | |
| Child Passenger Safety Programs: Distribution of car seats and child restraint inspections | Public Education Safety Initiatives | Safer People | |
| Public Awareness and Training: Educating communities on the importance of seat belt and child restraint use | Public Education Safety Initiatives | Safer People | X |
| Automated Enforcement Technologies: Red-light cameras and speed monitoring devices | Roadway Safety and Infrastructure | Safer Roads | X |
| Targeted Enforcement Programs: Increased patrols in high-crash zones | Emergency Response and Law Enforcement Coordination | Safer Speeds | X |
| Public Education Campaigns: Messaging to promote responsible driving behavior | Public Education Safety Initiatives | Safer People | |
| Infrastructure Improvements: Installation of crosswalks, pedestrian signals, and bike lanes | Bicycle and Pedestrian Safety Initiatives | Safer Roads | X |
| Community Engagement: Programs to educate road users on safe walking and cycling practices | Bicycle and Pedestrian Safety Initiatives | Safer People | X |
| Law Enforcement Support: Targeted enforcement in areas with high pedestrian and cyclist activity | Bicycle and Pedestrian Safety Initiatives | Safer Speeds | |
| Graduated Driver Licensing (GDL) Support: Strengthening laws and enforcement for new drivers | Public Education Safety Initiatives | Safer People | |
| Teen Driver Education Initiatives: School-based programs and parental involvement strategies | Public Education Safety Initiatives | Safer People | |
| Awareness Campaigns: Efforts to reduce risky behaviors such as texting while driving | Public Education Safety Initiatives | Safer People | |

Oklahoma Statewide Plans & Documents

Oklahoma DOT Strategic Highway Safety Plan - 2023

Summary: The 2023-2028 SHSP provides a comprehensive, data-driven framework to enhance traffic safety across Oklahoma. By focusing on key emphasis areas and leveraging advanced technologies, enforcement strategies, and public engagement, the state aims to significantly reduce fatalities and serious injuries. Ultimately, moving toward a safer roadway system for all users.

| Transportation Safety Issues | Safety Category | Safe System Principles | Alignment with SS4A Plan |
|---|---|------------------------|--------------------------|
| Lane Departures: Most common type of crash in Oklahoma | Roadway Safety and Infrastructure | | |
| Lane Departures: Strategies include installing cable barriers, rumble strips, high-friction surface treatments, and improving road design to mitigate risks | Roadway Safety and Infrastructure | Safer Roads | X |
| Impaired Driving: Education programs like AlcoholEdu for high school | Public Education Safety Initiatives | Safer People | |
| Impaired Driving: Law enforcement efforts such as high-visibility patrols and sobriety checkpoints | Emergency Response and Law Enforcement Coordination | Safer Speeds | X |
| Occupant Protection: Programs like "Click It or Ticket" and legislative efforts to expand seat belt requirements aim to increase compliance | Emergency Response and Law Enforcement Coordination | Safer People | |
| Occupant Protection: Public education campaigns target high-risk groups, including young drivers and pickup truck occupants, who have lower seat belt usage rates | Public Education Safety Initiatives | Safer People | |
| Unsafe Speeds: Strategies to manage speed include engineering solutions, public awareness campaigns, and strict law enforcement | Emergency Response and Law Enforcement Coordination | Safer Speeds | |
| Intersections: Countermeasures include installing roundabouts, improving signage and lighting, and using Intersection Control Evaluation to select optimal designs | Roadway Safety and Infrastructure | Safer Roads | X |
| Commercial Motor Vehicles (CMVs) and Work Zones: Enforcement focuses on addressing risky driver behavior, such as speeding and following too closely | Emergency Response and Law Enforcement Coordination | Safer Speeds | |
| Commercial Motor Vehicles (CMVs) and Work Zones: ODOT has implemented educational programs targeting teen drivers & CMV operators to promote work zone safety | Public Education Safety Initiatives | Safer People | |
| Motorcycle and All-Terrain Vehicle (ATV) Crashes: Safety programs emphasize helmet use, rider education, and public awareness initiatives | Public Education Safety Initiatives | Safer People | |
| Vulnerable Road Users (VRU) Safety: Strategies to enhance VRU safety include improved crosswalks, better lighting, reduced speed limits, and targeted law enforcement | Roadway Safety and Infrastructure | Safer Roads | X |
| Vulnerable Road Users Education: Public education campaigns focus on safe crossing behaviors and driver awareness | Public Education Safety Initiatives | Safer People | X |

Oklahoma Statewide Plans & Documents

Oklahoma Public Transit Policy Plan - 2020

Summary: The Oklahoma Public Transit Policy Plan integrates various safety measures to reduce traffic-related incidents and enhance the overall security of transit users. By investing in infrastructure, driver training, technology, and emergency preparedness, the state aims to create a safer and more efficient public transportation system. Addressing existing challenges and leveraging new opportunities will be key to achieving long-term traffic safety goals.

| Transportation Safety Issues | Safety Category | Safe System Principles | Alignment with SS4A Plan |
|---|---|------------------------|--------------------------|
| Expansion of dedicated transit lanes to reduce conflicts between buses and private vehicles | Roadway Safety and Infrastructure | Safer Roads | |
| Enhanced lighting, signage, and visibility at transit stops to protect pedestrians and waiting passengers | Bicycle and Pedestrian Safety Initiatives | Safer Roads | |
| Investments in bus shelters and designated pick-up/drop-off points to minimize unsafe boarding and exiting | Bicycle and Pedestrian Safety Initiatives | Safer Roads | X |
| Encouraging the use of public transportation to decrease the number of private vehicles on the road, thus reducing overall traffic accidents | Public Education Safety Initiatives | Safer People | |
| Enhancing collaboration between transit agencies and local law enforcement to identify high-risk areas and implement safety interventions | Emergency Response and Law Enforcement Coordination | Safer Speeds | |
| Implementing speed management strategies around transit hubs and pedestrian-heavy areas | Bicycle and Pedestrian Safety Initiatives | Safer Roads | |
| Comprehensive training programs for transit operators, including defensive driving and emergency response procedures | Public Education Safety Initiatives | Safer People | |
| Strict enforcement of drug and alcohol testing policies to ensure that transit operators maintain the highest levels of safety | Emergency Response and Law Enforcement Coordination | Safer People | |
| Ongoing safety audits and performance reviews for transit drivers to reinforce best practices and prevent unsafe driving behaviors | Public Education Safety Initiatives | Safer People | |
| Installation of collision avoidance systems, automatic braking, and onboard cameras to enhance passenger and driver safety | Future Safety-Focused Transportation Projects | Safer Vehicles | |
| Implementation of electronic fare collection and contactless payment options to reduce conflicts between passengers and drivers | Future Safety-Focused Transportation Projects | Safer Vehicles | |
| Designing transit routes with dedicated bicycle lanes and pedestrian pathways to minimize conflicts between different modes of transportation | Bicycle and Pedestrian Safety Initiatives | Safer Roads | |
| Promoting public awareness campaigns on transit safety, focusing on proper pedestrian behavior around buses and transit stops | Bicycle and Pedestrian Safety Initiatives | Safer People | |
| Encouraging "complete streets" policies that prioritize safe access for all road users, including those relying on public transit | Future Safety-Focused Transportation Projects | Safer People | X |

Oklahoma Statewide Plans & Documents

| | | | |
|---|---|-----------------|---|
| Development of emergency response protocols in coordination with local authorities and first responders | Emergency Response and Law Enforcement Coordination | Post Crash Care | X |
| Implementation of communication networks to alert passengers of emergencies and alternate routes in real-time | Future Safety-Focused Transportation Projects | Safer People | |
| Increased state and federal investment in transit safety programs | Future Safety-Focused Transportation Projects | Safer People | |
| Enhanced data collection and analysis to identify high-risk areas and deploy targeted safety measures | Roadway Safety and Infrastructure | Safer Roads | |
| Public-private partnerships to support the adoption of innovative transit safety technologies | Public Education Safety Initiatives | Safer People | |

APPENDIX F

PROJECT PRIORITIZATION CRITERIA MOE MEMO

Technical Memorandum

Prioritization Criteria & MOE (Update)

To: Shelby Deere

From: Antony Atencio

Date: 4/24/25

Re: Safe Streets for All - Muscogee Creek Nation



Introduction

This memo outlines the criteria and measures of effectiveness (MOEs) for project prioritization in the Safe Streets for All (SS4A) Safety Action Plan for Muscogee Creek Nation. These criteria and MOEs will be applied to assess and prioritize intersections and roadway segments, helping to identify projects that improve safety and mobility within the Muscogee Creek Nation roadway network.

Project Prioritization Criteria

To prioritize locations with safety issues for the SS4A Safety Action Plan, key criteria paired with associated MOEs have been established. **Table 1** shows the initial (draft) criteria and corresponding MOEs.

Table 1 – List of Initial Criteria & MOEs.

| Criteria | MOE | Weight |
|--|--|--------|
| #1. Safety | ➤ Crash Rate (CR) | |
| | ➤ Number of Total Crashes (NTC) | |
| | ➤ Crash Reoccurrence (CR) | |
| | ➤ High Crash Reoccurrence (CR) | |
| | ➤ High Injury Network (HIN) | |
| #2. Disadvantaged Communities | ➤ Areas of Persistent Poverty (APP) | |
| | ➤ Urban-Rural Classification (URC) | |
| | ➤ Non-Dominant Population (NDP) | |
| | ➤ Vehicle Ownership (VO) | |
| | ➤ Area of Disadvantaged Communities (ADC) | |
| #3. Community Engagement | ➤ Public/Stakeholder Input (PSI) | |
| #4. Proximity | ➤ Proximity to Casinos/Schools/Railroad Crossings (PCSR) | |
| #5. Vulnerable Users | ➤ Pedestrian Crash Rate (PCR) | |
| | ➤ Bicycle Crash Rate (BCR) | |
| #6. Synergy with Other Projects | ➤ Addressed by Other Projects (e.g. INCOG) (AOP) | |

| | | |
|--|---------------------------------------|--|
| #7. Traffic Volume | ➤ Annual Average Daily Traffic (AADT) | |
| #8. Roadway Functional Classification | ➤ Roadway Classification Type (RCT) | |

Measures of Effectiveness (MOEs)

This section explains each MOE associated with the identified criteria in **Table 1**, outlining how each MOE is developed and its role in measuring the impact of that criterion.

Locations are categorized as “intersections” or “roadway segments” for crash analysis, with the following considerations for each.

Roadway Segment:

- Segment Length Threshold: To address variability in segment lengths, segments shorter than 0.1 miles are combined with adjacent segments to meet this threshold.

Intersections:

- To define intersection locations for identifying intersection-related crashes, a 350-foot radius buffer is applied around each roadway crossing. This approach includes a review of closely spaced intersections to eliminate redundancies.

Criterion #1: Safety

Five (5) MOEs have been developed to assess safety risks supporting project prioritization based on crash frequency, severity, and recurrence, which are explained below:

➤ **Crash Rate (CR):**

This MOE evaluates all crashes based on severity using the Equivalent Property Damage Only (EPDO) method, which assigns a cost to each location according to crash severity levels.

The EPDO method weighs crashes based on severity using direct cost coefficients for each crash type. **Table 2**, is derived from the Oklahoma method for calculating crash costs, as outlined by the Federal Highway Administration (FHWA) in its Safety Program focused on crash costs for highway safety analysis. In this table, rows K to O represent the costs associated with different crash severity levels as follows:

- K: Fatal
- A: Incapacitating Injury
- B: Non- Incapacitating Injury
- C: Possible Injury
- O: Property Damage Only

Table 2 – ODOT MAIS to KABCO Direct Conversion Crash Unit Costs (2016 Dollars)

| KABCO | Crash Unit Cost (\$) |
|--------------|-----------------------------|
| K | 9,600,000 |
| A | 2,553,600 |
| B | 451,200 |
| C | 28,800 |
| O | 4,200 |

Source: Table 50 – Crash Costs for Highway Safety – FHWA

The EPDO crash rate for each road segment and each intersection is calculated using the following formulas:

EPDO Crash Rate (Roadway Segment)

$$= \frac{\sum(\text{Number of Crashes in each severity level} * \text{Their Coefficient from Table 2}) * 100,000,000}{365 * 5 (\text{Study period}) * \text{AADT} * \text{road segment Length} * \text{Sum all EPDO coefficients}}$$

EPDO Crash Rate (Intersection)

$$= \frac{\sum(\text{Number of Crashes in each severity level} * \text{Their Coefficient from Table 2}) * 100,000,000}{365 * 5 (\text{Study period}) * \text{AADT} * \text{Sum all EPDO coefficients}}$$

Measure:

A calculated EPDO crash rate will be assigned to each identified roadway segment and intersection location.

➤ **Number of Total Crashes (NTC):**

This MOE measures the total number of crashes (all severities) at each location. This value ensures that locations with higher total crash numbers are emphasized in the analysis for further evaluation.

Measure:

A total crash number will be assigned to each identified roadway segment and intersection.

➤ **Crash Reoccurrence (CR):**

Crash Recurrence (CR) measures whether crashes have occurred at a location in different years, regardless of their severity or frequency. Each year in which at least one crash occurs adds to the total score. For example, if a crash happens at a certain location once only in 2017, it receives a score of 1; if another crash occurs at that same location in 2018, the score will be 2, and so on.

Measure:

A value between Zero (0) and Five (5) is assigned to each location based on the number of years in which at least one crash occurred over a specified period:

- **5:** Crashes occurred in five years
- **4:** Crashes occurred in four years
- **3:** Crashes occurred in three years
- **2:** Crashes occurred in two years
- **1:** Crashes occurred in only one year
- **0:** No crashes occurred in any year

➤ **High Crash Reoccurrence (HCR):**

High Crash Reoccurrence (HCR) identifies locations where the total number of crashes, in a given year, meets or exceeds a pre-defined number of crashes as a threshold. HCR assigns a score only when the total number of crashes in a certain location surpasses that threshold. A location receives a score of 5 if it exceeds the threshold in all five years, 4 if it does so in four years out of five years, and so on, down to 0 if no years meet the pre-defined number of crashes as a threshold.

Measure:

A value between Zero (0) and Five (5) is assigned to each location based on the number of years in which crashes met or exceeded the pre-defined number of crashes as a threshold over a specified period:

- **5:** Crashes recurring in five years, meeting or exceeding the high-crash threshold
- **4:** Crashes recurring in four years, meeting or exceeding the high-crash threshold
- **3:** Crashes recurring in three years, meeting or exceeding the high-crash threshold
- **2:** Crashes recurring in two years, meeting or exceeding the high-crash threshold
- **1:** Crashes occurring in only one year, meeting or exceeding the high-crash threshold
- **0:** No years meeting the high-crash threshold

➤ **High Injury Network (HIN):**

This MOE focuses on injury severity crashes, considering these three severity levels: "fatal," "incapacitating," and "non-incapacitating" injuries. It employs a crash rate approach similar to the EPDO method but excludes possible injury and property damage only crashes and normalizes based on AADT without accounting for roadway length. The crash rate for each road segment and intersection is calculated using the following formula:

$$\text{Crash Rate (for HIN)} = \frac{\sum(\text{Number of Crashes in each severity level} * \text{Their Coefficient from Table 2}) * 100,000,000}{365 * 5 (\text{Study period}) * \text{AADT} * \text{Sum all EPDO coefficients}}$$

Measure:

A calculated crash rate, using the above formula, will be assigned to each location.

A detailed approach determining the HIN is provided in another memo (High Injury Network Development.)

Criterion #2: Disadvantaged Communities

Five (5) MOEs have been developed to measure the disadvantaged community impact in safety project prioritization.

➤ *Areas of Persistent Poverty (APP)*

This MOE identifies areas of persistent poverty using USDOT data in conjunction with other national demographic data.

Measure:

A value of Zero (0) or One (1) is assigned to each location based on whether it falls within an area of persistent poverty, as follows:

- **1:** Falls within area of persistent poverty
- **0:** Falls outside area of persistent poverty

➤ *Urban-Rural Classification (URC)*

This MOE evaluates whether a location falls within urban or rural areas, acknowledging the unique challenges faced by rural communities. For this study, the City of Tulsa is considered to be the only urban area.

Measure:

A value of either Zero (0) or One (1) is assigned to each location:

- **0:** Urban areas
- **1:** Rural area

➤ *Non-Dominant Population (NDP)*

This MOE identifies locations with non-dominant population using national demographic datasets including American Community Survey (ACS) data. It focuses on areas with a high percentage of non-dominant residents.

Measure:

A value of One (1) or Zero (0) is assigned to each location based on whether it falls within an area with a significant non-dominant population, as follows:

- **1:** Falls within area with a significant non-dominant population
- **0:** Falls outside of area with a significant non-dominant population

➤ *Vehicle Ownership (VO)*

This MOE identifies locations with varying levels of vehicle ownership using American Community Survey (ACS) data. It focuses on areas where households have limited access to personal vehicles, which may impact transportation access and safety needs.

Measure:

A value between Zero (0) and Three (3) is assigned to each location based on the number of vehicles available per household, as follows:

- **0:** Falls within area where average households have 3 or more vehicles available
- **1:** Falls within area where average households have 2 vehicles available
- **2:** Falls within area where average households have 1 vehicle available
- **3:** Falls within area where average households have no vehicle available

➤ **Areas of Disadvantage Communities (ADC)**

This MOE identifies areas designated as disadvantaged communities using USDOT 2021 data, which considers factors such as income, transportation access, and environmental burdens. The goal is to assess areas that face greater challenges related to transportation, including economic hardship and limited access to safe and efficient transportation options.

Measure:

A value between Zero (0) and One (1) is assigned to each location based on whether it falls within a disadvantaged community, as follows:

- **1:** Falls within a disadvantaged community
- **0:** Falls outside of a disadvantaged community

Criterion # 3: Community Engagement

One (1) MOE has been developed to evaluate community engagement, ensuring that public and stakeholder perspectives are considered in the project prioritization process.

➤ **Public/Stakeholder Input (PSI)**

This MOE evaluates whether concerns about a location or safety issue have been raised by the public and stakeholders through meetings, surveys and/or comments.

Measure:

A value of either Zero (0) or One (1) is assigned to each location based on received public and stakeholder input:

- **0:** No public input received (no reported concerns)
- **1:** Public input received (community concerns reported)

Criterion # 4: Proximity

One (1) MOE has been developed to assess the proximity of crash locations to **casinos, schools, and railroad crossings**. This provides insight into certain locations due to their status as significant places or venues.

➤ **Proximity to Casinos/Schools/railroad crossings (PCSR)**

This MOE evaluates if a crash location falls within vicinity of the following three (3) locations:

- Casinos
- Schools
- Railroad Crossings

Measure:

A value between Zero (0) and Five (5) is assigned to each location based on its proximity to these significant locations:

- **0:** No proximity to casinos, schools, or railroad crossings
- **1-5:** Proximity to one or more specified locations, with values increasing based on proximity to multiple types. (For example, a location near both a school and a railroad crossing would receive a value of 2).

Location Definitions:

- **Casinos, Schools:** a 1000-foot radius buffer is established around casinos and school locations to capture nearby crashes.
- **Railroad Crossings:** Identified using a specific attribute in the dataset, allowing for straightforward identification and analysis.

Criterion # 5: Vulnerable Users

Since consideration of vulnerable road users is another important part of the SS4A Safety Action Plan, two (2) MOEs have been developed to assess safety specifically for pedestrians and bicyclists. Identifying locations where enhanced safety measures may be beneficial for these groups.

➤ **Pedestrian Crash Rate (PCR)**

The Pedestrian Crash Rate (PCR) is an MOE that evaluates the frequency of crashes involving pedestrians. This analysis utilizes the same approach to the Crash Rate Analysis (CRA) under the Safety Risk Assessment Criteria, but it focuses exclusively on pedestrian-related crashes. The PCR aims to identify locations with higher pedestrian crash rates, which may indicate safety concerns for vulnerable road users.

Measure:

A calculated pedestrian crash rate will be assigned to each location.

➤ **Bicycle Crash Rate (BCR)**

This MOE assesses the frequency of crashes involving bicycles. Like the PCR, the BCR employs a methodology similar to the CRA focusing solely on crashes involving bicyclists. This MOE aims to highlight locations with elevated bicycle crash rates.

Measure:

A calculated bicycle crash rate will be assigned to each location.

Criterion # 6: Synergy with Other Projects

One (1) MOE has been developed to coordinate with ongoing or planned projects. High risk locations that are already addressed by other projects or partners, such as INCOG, the SS4A Safety Action Plan, will be considered in the prioritization process.

➤ *Addressed by Other Projects (AOP)*

This MOE evaluates whether the location is identified as part of an ongoing or planned project.

Measure:

A value of either One (1) or Two (2) is assigned to each location based on its status in relation to other ongoing or planned projects:

- **1:** Location is addressed by other ongoing or planned projects
- **2:** Location is not addressed by other ongoing or planned projects

Criterion #7: Traffic Volume

One (1) MOE has been developed to assess the impact of traffic volume on roadway segments and intersections.

1. Average Annual Daily Traffic (AADT)

This MOE evaluates the impact of the AADT on both roadway segments and intersections. The locations are categorized into Low, Medium, and High AADT levels using the Jenks Natural Breaks algorithm (Reference: Jenks, G. F. (1967). "The Data Model Concept in Statistical Mapping," International Yearbook of Cartography, 7, 186–190).

For the purposes of this study, AADT is defined as follows:

- **AADT for Roadway Segments:** The raw AADT data sourced from the ODOT roadway network, which is an estimate of the average number of vehicles that pass a specific roadway segment each day over the course of a year.
- **AADT for Intersections:** The AADT for an intersection is calculated as the sum of the AADT values of all the roadway segments that intersect at that location.

Measure:

Each location is assigned to one of the following AADT categories:

- High AADT
- Medium AADT
- Low AADT

Criterion #8: Roadway Functional Classification

One (1) MOE has been developed to assess the functional classification of roadways.

➤ **Roadway Classification Type (RCT)**

This MOE evaluates the functional classification of roadway segments, which is reported as one attribute for roadway segments in the ODOT database.

Measure:

Each location is assigned to one of the following functional classification categories:

- Freeway/Expressway
- Interstate
- Principal Arterial
- Secondary Arterial
- Major Collector
- Secondary Collector

NOTE: Once the criteria and MOEs are finalized, a weight for each MOE will be determined in collaboration with the Muscogee Creek Nation oversight team. Following this, the rating and ranking process will be implemented to evaluate each location based on the weighted criteria/MOE. This systematic approach will ensure that the most impactful projects are prioritized, enhancing safety and mobility throughout the Nation.

APPENDIX G

RATING AND RANKING PROCESS FOR HOTSPOT LOCATION SELECTION AND PROJECT PRIORITIZATION

Technical Memorandum

Rating and Ranking Process for Hotspot Location Selection and Project Prioritization (update)

To: Shelby Deere

From: Antony Atencio

Date: 04/25/2025

Re: Safe Streets for All - Muscogee Creek Nation



Introduction

This memorandum outlines the methodology used for rating and ranking locations to identify a list of hotspot areas in the Safe Streets and Roads for All (SS4A) plan for the Muscogee Creek Nation. This methodology will be applied to prioritize locations, including roadway segments and intersections, that require safety improvements across the Nation.

Methodology for Identifying Hotspot Locations

To identify hotspot locations, roadway segments and intersections are evaluated based on the criteria and Measures of Effectiveness (MOEs) outlined in the Project Prioritization memo. An index is developed for each location based on how well it meets the defined MOEs and criteria. Locations are then ranked according to their index, with higher-scoring locations designated as hotspots. These locations will undergo further assessment to identify safety risks and serve as the foundation for potential improvements projects.

The ranking index for each roadway segment and intersection is calculated using the following formula:

$$Ranking\ Index = \left[\sum (CRA_i * W_{CRA_i}) \right] * \prod NCRA_i$$

Where:

- CRA: crash-related MOE
- W_{CRA} : weight assigned to each crash-related MOE
- NCRA: weighting multiplier (factor) of each non-crash-related MOE.
- Π : Product symbol, which calculates the multiplication of all non-crash-related MOEs factors.

➤ Impact of Crash-Related MOEs

For crash-related MOEs, there is a wide range of values; therefore, all values are normalized to the same scale before assigning weights. Normalization is done on a scale from one (1) to ten (10) prior to assigning the weights. After normalizing the values, each MOE is assigned a weight between one (1) to ten (10), based on its relative importance in assessing safety risks. Once weighed, the values are summed up to provide a base safety index for each location.

The impact of vulnerable road users is analyzed separately when calculating the safety factor. For one list of hotspot locations, the pedestrian and bicycle crash rate MOEs are not considered, while another list focuses only on vulnerable road users, using only the pedestrian and bicycle crash rate MOEs and setting all other MOEs to zero (0). **Table 1** outlines the crash-related MOEs and their corresponding weights for non-vulnerable road user's locations. **Table 2** presents the weights associated with pedestrian and bicycle crash rates, which are used for selecting locations related to vulnerable road users.

Table 1: Crash Related MOEs and Their Weight

| Criteria | MOE | Weight |
|-----------------------------|---|--------|
| #1. Safety | ➤ Crash Rate (CR) | 5 |
| | ➤ Number of Total Crashes (NTC) | 8 |
| | ➤ Number of Fatal/Incapacitating Injury Crashes (FIC) | 10 |
| | ➤ High Crash Reoccurrence (CR) | 5 |
| #5. Vulnerable Users | ➤ Pedestrian Crash Rate (PCR) | 0 |
| | ➤ Bicycle Crash Rate (BCR) | 0 |

Table 2: Bike and Pedestrian Crash Related MOEs and Their Weight

| Criteria | MOE | Weight |
|-----------------------------|---|--------|
| #1. Safety | ➤ Crash Rate (CR) | 0 |
| | ➤ Number of Total Crashes (NTC) | 0 |
| | ➤ Number of Fatal/Incapacitating Injury Crashes (FIC) | 0 |
| | ➤ High Crash Reoccurrence (CR) | 0 |
| #5. Vulnerable Users | ➤ Pedestrian Crash Rate (PCR) | 10 |
| | ➤ Bicycle Crash Rate (BCR) | 10 |

➤ Impact of non-crash related MOEs:

Non-crash-related MOEs are treated as binary factors, meaning they either apply or do not apply to a location. These factors either contribute to the safety index (if the condition is met) or have no effect (if the condition is not met). These MOEs adjust the final prioritization index by increasing the index for locations that meet specific conditions. For example, if two locations have similar safety scores, the location that falls within an Area of Persistent Poverty will receive a 10% increase in its final index. The non-crash-related MOEs and their weighting multipliers are shown in **Table 3**.

Table 3: Non-Crash Related MOEs and their Weighting Multipliers

| Criteria | MOE | Weighting Multiplier |
|--|--|----------------------|
| #1. Safety | ➤ High Injury Network (HIN) | 1.2 |
| #2. Disadvantaged Communities | ➤ Areas of Persistent Poverty (APP) | 1.1 |
| | ➤ Urban-Rural Classification (URC) | 1 (1.5*) |
| | ➤ Non-Dominant Population (NDP) | 1.1 |
| | ➤ Vehicle Ownership (VO) | 1.1 |
| #3. Community Engagement | ➤ Public/Stakeholder Input (PSI) | 1.4 |
| #4. Proximity | ➤ Proximity to Casinos/Schools/Railroad Crossings (PCSR) | 1.2 |
| #6. Synergy with Other Projects | ➤ Not Inside INCOG (NI) | 1.5 (5*) |
| #7. Traffic Volume | ➤ Annual Average Daily Traffic (AADT) | 1 |
| #8. Roadway Functional Classification | ➤ Interstate | 1 |
| | ➤ Major Collector | 2(5*) |
| | ➤ Secondary Arterial | 2(5*) |
| | ➤ Secondary Collector | 2(5*) |
| | ➤ Principal Arterial | 1 |
| | ➤ Local | 2(5*) |

* Modified Wights based on Scenario 2

Two scenarios have been considered to emphasis on the locations outside of **INCOG boundaries (MOE #6)** and the **functional classification of roadway segments (MOE #8)** on the final safety index. The weighting multipliers are adjusted differently in each scenario to determine how these factors influence the selection of hotspot locations.

- **Scenario 1:**

Locations inside INCOG boundaries or on an Interstate or Major Arterial receive a lower weight. However, they can still be selected if their safety index is high. **Table 3** presents the non-crash-related MOEs and their corresponding weighting multipliers under this scenario.

- **Scenario 2:**

The weighting multipliers for locations outside INCOG boundaries or in any functional classification other than Interstate/Major Arterial are set high enough that no location inside INCOG boundaries or on an interstate can be selected.

- The weight for **"Not in INCOG Area"** is raised to **5**.
- The weight for **all functional classifications other than Interstate/Major Arterial** is raised to **5**.
- The weight for **"Rural/Urban"** is raised to **1.5**.

Note:

There are a total of 502 fatal crashes from 2017 to 2021 across the entire Muscogee Creek Nation.

By excluding locations within INCOG boundaries and roadway segments classified as Interstate or Major Arterial, the number of fatal crashes in the remaining areas is 102.

- **Under Scenario 2**, 18 fatal crashes from these remaining areas were included among the 30 selected hotspot locations.
- **Under Scenario 1**, which included the entire MCN (but with lower weights for INCOG and major classifications), 37 fatal crashes were selected among the 30 selected hotspot locations.

Initial Hotspot Location Analysis: Top 30 Locations Evaluated Under Two Scenarios

This section presents the results of the top **thirty (30)** roadway segments and intersections for both vulnerable and non-vulnerable road users. These locations were identified based on ranking scores derived from two scenarios that prioritize crash-related and non-crash-related factors. The analysis highlights areas in need of safety improvements, with rankings and key data provided for each scenario.

The following assumption is considered when developing the list of the top 30 locations:

- Locations with fewer than five (5) total crashes must have at least three (3) high-severity crashes (fatal or incapacitating injury) to remain on the list; any location with fewer than 5 total crashes and fewer than 3 high-severity crashes is removed.

For each scenario, the results include:

List of Tables

Two tables are provided for each scenario, presenting the selected locations along with key factors such as crash data and the final score for each location:

- A table listing top 30 locations for vulnerable road users (VRU)
- A table listing top 30 locations for non-vulnerable road users (non-VRU)

List of Maps:

Several maps that visualize the selected locations in relation to key factors, including:

- INCOG boundaries and roadway classifications
- High Injury Network (HIN)
- Non-Dominant population
- Areas of Persistent Poverty (APP)
- Vehicle ownership
- Proximity to schools, casinos, and roadway crossings

The maps are provided for each scenario include:

- A map for VRU hotspot locations (30 locations)
- A map for non-VRU hotspot locations (30 locations)

➤ Hotspot Locations for Scenario 1

Table 4: Top 30 VRU Roadway Segments – Scenario 1

| Location Rank | Location | Total Number of Crashes (#) | Fatal Crashes (#) | Incapacitating Crashes (#) | Non-Incapacitating Crashes (#) | Pedestrian Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | Bike Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | On HIN |
|---------------|--|-----------------------------|-------------------|----------------------------|--------------------------------|--|--|--------|
| 1 | E 68th St from S 85th East Ave to S Memorial Dr, Tulsa | 1 | 1 | 0 | 0 | 4.21 | 1.00 | Yes |
| 2 | S Broadway St from W Jefferson Ave to Maple St, Checotah* | 1 | 0 | 1 | 0 | 1.19 | 1.00 | Yes |
| 3 | N York St from Old Shawnee Rd to E Okmulgee St, Muskogee* | 2 | 0 | 0 | 2 | 1.00 | 1.00 | Yes |
| 4 | Southwest Blvd from W 17th PI to W 21st PI, Tulsa | 1 | 1 | 0 | 0 | 1.00 | 2.46 | Yes |
| 5 | US Highway 62 from N 3740 Rd to N 7th St, Okemah | 2 | 1 | 0 | 0 | 1.26 | 1.00 | Yes |
| 6 | E 15th from S 73rd East Ave to S Sheridan Rd, Tulsa | 3 | 1 | 1 | 1 | 2.48 | 1.00 | Yes |
| 7 | S Peoria Ave from E 57th PI to E 61st St, Tulsa* | 4 | 1 | 1 | 1 | 1.76 | 1.00 | Yes |
| 8 | E Okmulgee St from S Main St to Spaulding Blvd, Muskogee | 2 | 0 | 1 | 0 | 1.19 | 1.00 | No |
| 9 | 1st St from N Guthrie Ave to S Greenwood Ave, Tulsa | 2 | 0 | 0 | 1 | 1.03 | 1.00 | Yes |
| 10 | E 31st St from S Sheridan Rd to S 67th East Ave, Tulsa | 1 | 1 | 0 | 0 | 2.64 | 1.00 | Yes |
| 11 | N 11th St from Tamaroa St to W Shawnee St, Muskogee | 1 | 0 | 1 | 0 | 1.18 | 1.00 | Yes |
| 12 | E Admiral Blvd from S Lewis Ave to S Columbia Ave, Tulsa | 3 | 0 | 2 | 0 | 1.99 | 1.00 | Yes |
| 13 | E 31st St from S 85th East Ave to S 116th East Ave, Tulsa* | 15 | 5 | 0 | 3 | 1.22 | 1.00 | Yes |
| 14 | Southwest Blvd from W 21st PI to W 25th St, Tulsa | 1 | 0 | 1 | 0 | 1.21 | 1.00 | Yes |
| 15 | W Archer St from N Maybelle Ave to I-244, Tulsa | 2 | 0 | 1 | 1 | 1.20 | 1.00 | Yes |
| 16 | E 6th St from S Quincy Ave to S Owasso Ave, Tulsa | 1 | 0 | 1 | 0 | 1.61 | 1.00 | Yes |
| 17 | E 2nd St from N McKinley Ave to N Wilson Ave, Sand Springs* | 5 | 1 | 2 | 2 | 1.39 | 1.00 | Yes |
| 18 | S 73rd East Ave from E 11th St to E 15th St, Tulsa | 3 | 0 | 1 | 1 | 1.48 | 1.00 | Yes |
| 19 | E Admiral Blvd from S Sheridan Rd to S 73rd East Ave, Tulsa | 3 | 1 | 0 | 1 | 1.25 | 1.00 | Yes |
| 20 | E 61st St from S Madison Ave to S Peoria Ave, Tulsa | 2 | 0 | 2 | 0 | 1.43 | 1.00 | Yes |
| 21 | S 91st East Ave from E Skelly Dr to E 21st St, Tulsa | 1 | 0 | 1 | 0 | 1.67 | 1.00 | Yes |
| 22 | E 11th St from S Memorial Dr to S 89th East Ave, Tulsa | 2 | 0 | 2 | 0 | 1.11 | 1.11 | Yes |
| 23 | S Peoria Ave from E Skelly Dr to E 56th St, Tulsa* | 2 | 0 | 0 | 1 | 1.00 | 1.02 | Yes |
| 24 | E Elgin Ave from Katy Downtown Trail to E 10th St, Tulsa | 2 | 0 | 1 | 1 | 1.21 | 1.00 | Yes |
| 25 | E Admiral Blvd from S 73rd East Ave to S Memorial Dr, Tulsa* | 6 | 2 | 1 | 3 | 1.58 | 1.00 | Yes |
| 26 | S Garnett Rd from E 3rd St to 7th St, Tulsa | 2 | 0 | 2 | 0 | 1.36 | 1.00 | Yes |
| 27 | S Garnett Rd from E 7th St to 11th St, Tulsa | 3 | 0 | 2 | 0 | 1.34 | 1.00 | Yes |
| 28 | S 30th St from W Okmulgee St to Columbus St, Muskogee | 1 | 0 | 0 | 0 | 1.03 | 1.00 | No |
| 29 | S 132nd East Ave from E 30th St to E 31st St, Tulsa | 1 | 0 | 0 | 1 | 1.54 | 1.00 | Yes |
| 30 | S Cheyenne Ave from W Edison St to W 11th St, Tulsa | 2 | 0 | 0 | 2 | 1.11 | 1.00 | Yes |

* Locations that also appear in the non-vulnerable road user list

Table 5: Top 30 Non-VRU Roadway Segments-- Scenario 1

| Rank | Location | Total Number of Crashes (#) | Fatal Crashes (#) | Incapacitating Crashes (#) | Non-Incapacitating Crashes (#) | Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | High Crash Reoccurrence (Years) - Normalized | On HIN |
|------|--|-----------------------------|-------------------|----------------------------|--------------------------------|---|--|--------|
| 1 | N York St from Old Shawnee Rd to E Okmulgee St, Muskogee | 75 | 0 | 3 | 12 | 1.029 | 10 | Yes |
| 2 | E 31st St from S 116th East Ave to S 86th Ave, Tulsa | 150 | 5 | 3 | 20 | 1.029 | 10 | Yes |
| 3 | S Harvard Ave from E 21st St to E 31st St, Tulsa | 76 | 0 | 4 | 12 | 1.048 | 10 | Yes |
| 4 | S Garnett Rd from E 15th St to E 22nd St, Tulsa | 95 | 1 | 2 | 6 | 1.055 | 10 | Yes |
| 5 | E Admiral PI from S Memorial Dr to S 89th East Ave, Tulsa | 51 | 2 | 2 | 11 | 1.136 | 10 | Yes |
| 6 | Broken Arrow Expy (64) from S Memorial Dr to I-44, Tulsa | 392 | 1 | 12 | 28 | 1.040 | 10 | Yes |
| 7 | S Sheridan Rd from E 15th St to E 21st St, Tulsa | 66 | 0 | 4 | 6 | 1.065 | 10 | Yes |
| 8 | E 91st St from S 67th East Ave to S 81st East Ave, Tulsa | 63 | 0 | 5 | 1 | 1.068 | 10 | Yes |
| 9 | S Peoria Ave from I-44 to E 56th St, Tulsa | 38 | 0 | 3 | 7 | 1.162 | 4.6 | Yes |
| 10 | E 81st St from S Harvard Ave to S Darlington Ave, Tulsa | 50 | 2 | 3 | 6 | 1.034 | 10 | Yes |
| 11 | S Broadway St from W Jefferson Ave to Maple St, Checotah | 8 | 0 | 2 | 0 | 1.073 | 1 | Yes |
| 12 | E 31st St from S 121st East Ave to S 130th East, Tulsa | 44 | 0 | 3 | 11 | 1.078 | 8.2 | Yes |
| 13 | E 91st St from Riverside Pkwy to S 53rd West Ave, Tulsa | 43 | 0 | 2 | 8 | 1.051 | 6.4 | Yes |
| 14 | S Garnett Rd from E 34th St to E 41st St, Tulsa | 30 | 0 | 7 | 6 | 1.079 | 4.6 | Yes |
| 15 | Highway 62 from East of N 6th St Curves, Morris | 7 | 0 | 2 | 2 | 1.118 | 1 | Yes |
| 16 | E 61st St from S 86th East Ave to S Mingo Rd, Tulsa | 65 | 1 | 1 | 2 | 1.056 | 10 | Yes |
| 17 | E 61st St from S 104th East Ave to S Garnett Rd, Tulsa | 57 | 0 | 1 | 8 | 1.035 | 10 | Yes |
| 18 | E Admiral PI from S 73rd East Ave to S Memorial Dr, Tulsa | 37 | 2 | 2 | 5 | 1.037 | 6.4 | Yes |
| 19 | Mingo Valley Expy (169) from E41st St SB Off Ramp to Broken Arrow Expy SB Off Ramp | 222 | 0 | 3 | 17 | 1.025 | 10 | Yes |
| 20 | E 51st St from S Vandalia Ave to S Hudson Ave, Tulsa | 48 | 0 | 6 | 7 | 1.074 | 6.4 | Yes |
| 21 | S Peoria Ave from E 57th St to E 61st St, Tulsa | 24 | 1 | 1 | 5 | 1.047 | 4.6 | Yes |
| 22 | Mingo Valley Expy (64) from Broken Arrow Expy SB On Ramp to E 51st St | 288 | 0 | 4 | 25 | 1.022 | 10 | Yes |
| 23 | S Sheridan Rd from E 21st St to E 23rd St, Tulsa | 48 | 0 | 4 | 5 | 1.154 | 8.2 | Yes |
| 24 | I-244 from W 1st St to N Main St | 158 | 3 | 6 | 40 | 1.070 | 10 | Yes |
| 25 | S Peoria Ave from E 62nd St to E 68th St, Tulsa | 35 | 1 | 2 | 8 | 1.041 | 6.4 | Yes |
| 26 | E 2nd St from N McKinley Ave to N Wilson Ave, Sand Springs | 24 | 1 | 3 | 2 | 1.026 | 2.8 | Yes |
| 27 | S Lewis Ave from E 11th St to E 15th St, Tulsa | 54 | 0 | 2 | 4 | 1.057 | 8.2 | Yes |
| 28 | E 7th St from S Okmulgee Ave to S Grand Ave, Okmulgee | 13 | 0 | 1 | 1 | 2.432 | 1 | Yes |
| 29 | S Sheridan Rd from E 4th PI to E 11th St, Tulsa | 31 | 1 | 3 | 4 | 1.037 | 4.6 | Yes |
| 30 | S Garnett Rd from E 41st St to Broken Arrow Expy (51), Tulsa | 40 | 0 | 0 | 8 | 1.017 | 8.2 | Yes |

Table 6: Top 30 VRU Intersections – Scenario 1

| Rank | Location | Total Number of Ped/Bike Crashes (#) | Fatal Ped/Bike Crashes (#) | Incapacitating Ped/Bike Crashes (#) | Non-Incapacitating Ped/Bike Crashes (#) | Pedestrian Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | Bike Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | On HIN |
|------|--|--------------------------------------|----------------------------|-------------------------------------|---|--|--|--------|
| 1 | N Hudson Ave & E Admiral Pl, Tulsa | 2 | 1 | 0 | 0 | 8.164 | 1.035 | Yes |
| 2 | E 63rd Pl & S Memorial Dr, Tulsa | 1 | 1 | 0 | 0 | 6.185 | 1.000 | Yes |
| 3 | E 13th & S Peoria Ave, Tulsa | 1 | 1 | 0 | 0 | 1.000 | 5.671 | Yes |
| 4 | N Main St & Court St, Muskogee* | 1 | 0 | 1 | 0 | 1.000 | 1.209 | Yes |
| 5 | E 47th St & S Lewis Ave, Tulsa | 1 | 0 | 1 | 0 | 1.000 | 4.971 | Yes |
| 6 | E 43rd St & S Yale Ave, Tulsa | 2 | 0 | 1 | 1 | 2.481 | 1.416 | Yes |
| 7 | W Broadway St & N 11th St, Tulsa | 1 | 0 | 0 | 1 | 1.000 | 1.588 | Yes |
| 8 | W Okmulgee St & N 43rd St, Muskogee | 1 | 0 | 0 | 1 | 1.000 | 1.575 | Yes |
| 9 | S Garnett Rd & E 26th St, Tulsa | 1 | 0 | 1 | 0 | 1.000 | 2.852 | Yes |
| 10 | Eastside Blvd & Callahan St, Muskogee | 1 | 0 | 0 | 1 | 1.000 | 1.406 | Yes |
| 11 | W Gentry Ave & SW 1st St, Checotah | 1 | 0 | 0 | 0 | 1.000 | 1.004 | No |
| 12 | E 7th St & S Joplin Ave (Hudson Villas), Tulsa | 5 | 0 | 0 | 3 | 1.454 | 2.555 | Yes |
| 13 | E 8th St & S Lewis St, Tulsa | 1 | 1 | 0 | 0 | 1.000 | 2.074 | Yes |
| 14 | E 51st St & S 76th East Ave, Tulsa | 1 | 0 | 1 | 0 | 2.014 | 1.000 | Yes |
| 15 | W Shawnee St & Chicago St, Muskogee* | 1 | 0 | 0 | 0 | 1.000 | 1.007 | Yes |
| 16 | N 32nd St & Court St, Muskogee | 1 | 0 | 0 | 0 | 1.004 | 1.000 | Yes |
| 17 | Houston St & Eastside Blvd, Muskogee | 1 | 0 | 0 | 0 | 1.004 | 1.000 | Yes |
| 18 | W Okmulgee St & Honor Heights Dr, Muskogee* | 1 | 0 | 0 | 0 | 1.003 | 1.000 | Yes |
| 19 | Broken Arrow Expy EB Off Ramp to S Memorial Dr, Tulsa* | 1 | 0 | 1 | 0 | 2.033 | 1.000 | Yes |
| 20 | W Okmulgee St & N 30th St, Muskogee | 1 | 0 | 1 | 0 | 1.193 | 1.000 | No |
| 21 | E Selmon Rd & N 2nd St, Eufaula | 1 | 0 | 0 | 0 | 1.003 | 1.000 | No |
| 22 | S 32nd St & Border Ave, Muskogee | 1 | 0 | 0 | 1 | 1.155 | 1.000 | No |
| 23 | E Main St & S Elgin Ave, Muskogee | 1 | 0 | 0 | 1 | 1.000 | 1.154 | No |
| 24 | W 23rd St & Southwest Blvd, Tulsa* | 2 | 0 | 0 | 2 | 1.170 | 1.000 | Yes |
| 25 | E Admiral Blvd & S Sheridan Rd, Tulsa | 1 | 0 | 1 | 0 | 1.113 | 1.000 | Yes |
| 26 | Highway 75 & E 13th St, Okmulgee | 1 | 0 | 0 | 0 | 1.000 | 1.015 | No |
| 27 | E Admiral Pl & S Sheridan Rd, Tulsa | 1 | 0 | 1 | 0 | 1.063 | 1.000 | Yes |
| 28 | N Main St & E 2nd St, Sand Springs | 1 | 0 | 0 | 1 | 1.034 | 1.000 | Yes |
| 29 | E 11th St & S Delaware Pl, Tulsa | 1 | 0 | 0 | 0 | 1.000 | 1.003 | Yes |
| 30 | E 126th East Ave & E 26th St, Tulsa | 1 | 0 | 0 | 1 | 1.000 | 1.329 | Yes |

* Locations that also appear in the non-vulnerable road user list

Table 7: Top 30 Non-VRU Intersections– Scenario 1

| Rank | Location | Total Number of Crashes (#) | Fatal Crashes (#) | Incapacitating Crashes (#) | Non-Incapacitating Crashes (#) | Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | High Crash Reoccurrence (Years) - Normalized | On HIN |
|------|---|-----------------------------|-------------------|----------------------------|--------------------------------|---|--|--------|
| 1 | W Shawnee St & N Main St, Muskogee | 62 | 0 | 3 | 1 | 1.048 | 10 | Yes |
| 2 | E 21st St & 169 Ramps, Tulsa | 157 | 0 | 3 | 20 | 6.746 | 10 | Yes |
| 3 | W Shawnee St & N York St, Muskogee | 84 | 0 | 2 | 5 | 1.052 | 10 | Yes |
| 4 | W Shawnee St & N County Club Rd, Muskogee | 77 | 0 | 3 | 7 | 1.123 | 10 | Yes |
| 5 | W Shawnee St & N 32nd St W, Muskogee | 70 | 0 | 2 | 4 | 1.079 | 10 | Yes |
| 6 | Broken Arrow Expy EB Off Ramp to S Memorial Dr, Tulsa | 131 | 1 | 4 | 13 | 3.787 | 10 | Yes |
| 7 | E 61st St & 169 Ramps, Tulsa | 137 | 0 | 3 | 11 | 1.694 | 10 | Yes |
| 8 | W Shawnee St & N 6th St, Muskogee | 59 | 0 | 2 | 4 | 1.074 | 10 | Yes |
| 9 | E Admiral PI & I-244 Ramps, Tulsa | 47 | 2 | 2 | 6 | 10.000 | 8.2 | Yes |
| 10 | N Main St & Court St, Muskogee | 27 | 0 | 1 | 5 | 1.034 | 4.6 | Yes |
| 11 | E 41st St & S Memorial Dr, Tulsa | 75 | 0 | 5 | 12 | 1.167 | 10 | Yes |
| 12 | Mingo Valley Expy & E Admiral PI Ramps, Tulsa | 70 | 1 | 3 | 5 | 3.836 | 10 | Yes |
| 13 | E Admiral PI & S Memorial Dr, Tulsa | 75 | 1 | 3 | 9 | 1.242 | 10 | Yes |
| 14 | Mingo Valley Expy & E 31st St Ramps, Tulsa | 132 | 0 | 2 | 18 | 1.652 | 10 | Yes |
| 15 | W Okmulgee St & Honor Height Dr, Muskogee | 49 | 0 | 1 | 9 | 1.161 | 10 | Yes |
| 16 | W Okmulgee St & N 32nd St, Muskogee | 77 | 0 | 1 | 3 | 1.115 | 10 | No |
| 17 | I-44 EB Ramps to S Yale Ave, Tulsa | 141 | 0 | 1 | 20 | 1.058 | 10 | Yes |
| 18 | Highway 75 and Ferguson Rd | 26 | 1 | 2 | 3 | 6.947 | 2.8 | Yes |
| 19 | E 71st St & S Sheridan Rd, Tulsa | 46 | 0 | 3 | 9 | 1.050 | 8.2 | Yes |
| 20 | E 71st St & S Quincy Ave, Tulsa | 70 | 0 | 3 | 20 | 1.100 | 10 | Yes |
| 21 | N Main St & W Okmulgee St, Muskogee | 27 | 0 | 0 | 3 | 1.023 | 4.6 | Yes |
| 22 | E 51st St & S Harvard Ave, Tulsa | 120 | 0 | 3 | 23 | 1.125 | 10 | Yes |
| 23 | W Shawnee St & N 11th St, Muskogee | 48 | 0 | 0 | 5 | 1.183 | 10 | Yes |
| 24 | W Shawnee St & Chicago St, Muskogee | 31 | 0 | 1 | 6 | 3.191 | 6.4 | Yes |
| 25 | W 71st St & S Olympia Ave, Tulsa | 82 | 0 | 4 | 7 | 1.079 | 10 | Yes |
| 26 | Military Blvd & Azalea Park Dr, Muskogee | 43 | 0 | 0 | 4 | 1.200 | 10 | Yes |
| 27 | Mingo Valley Expy SB Ramps to E 71st St, Tulsa | 138 | 0 | 1 | 9 | 1.042 | 10 | Yes |
| 28 | N Main St and Kinsley St, Muskogee | 7 | 0 | 4 | 1 | 1.163 | 1 | Yes |
| 29 | W 23rd St & Southwest Blvd, Tulsa | 39 | 0 | 2 | 6 | 1.368 | 8.2 | Yes |
| 30 | Highway 75 & Will Sampson Rd | 12 | 0 | 2 | 1 | 2.254 | 2.8 | Yes |

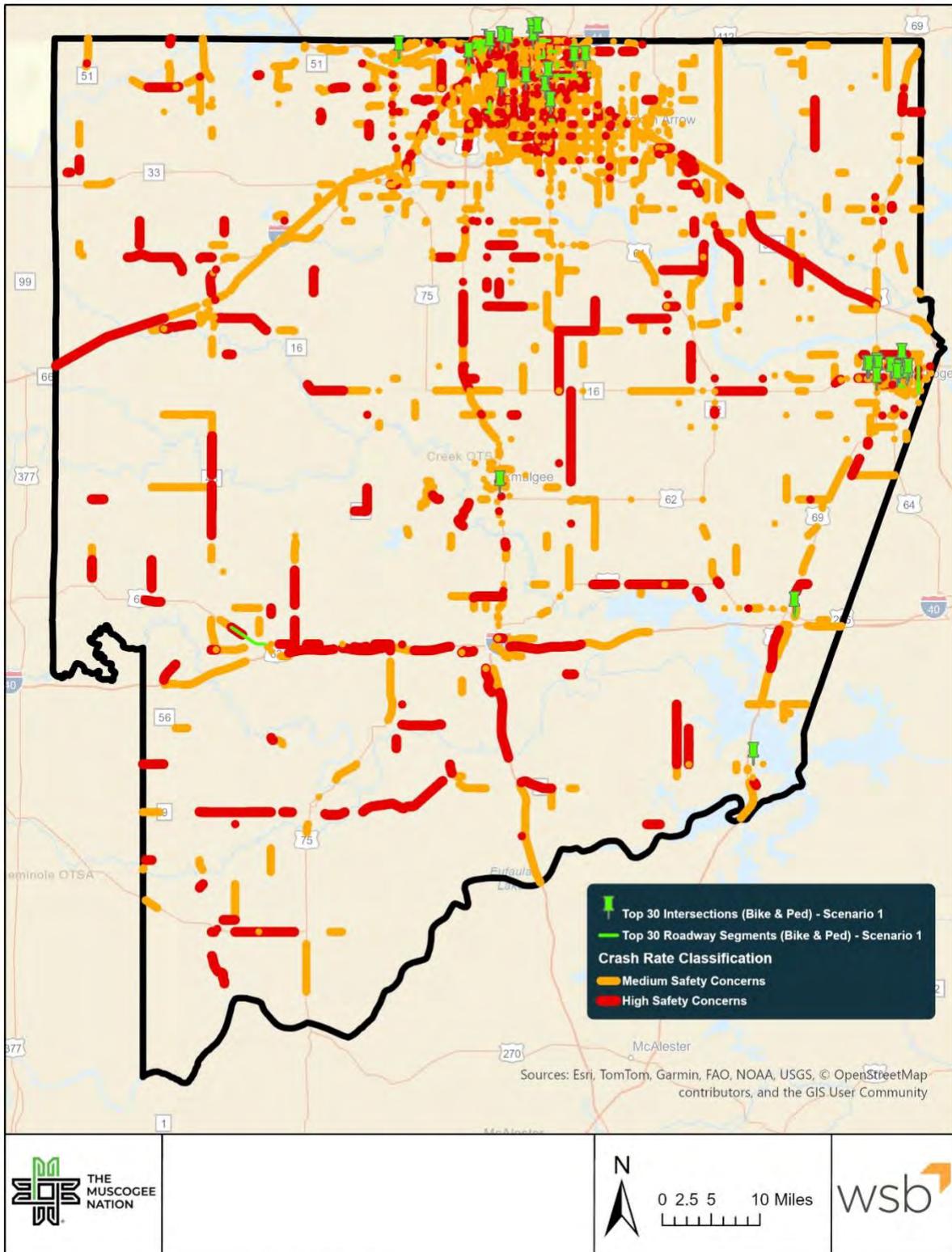


Figure 2: VRU Top 30 Locations – Scenario 1 – With High Injury Network

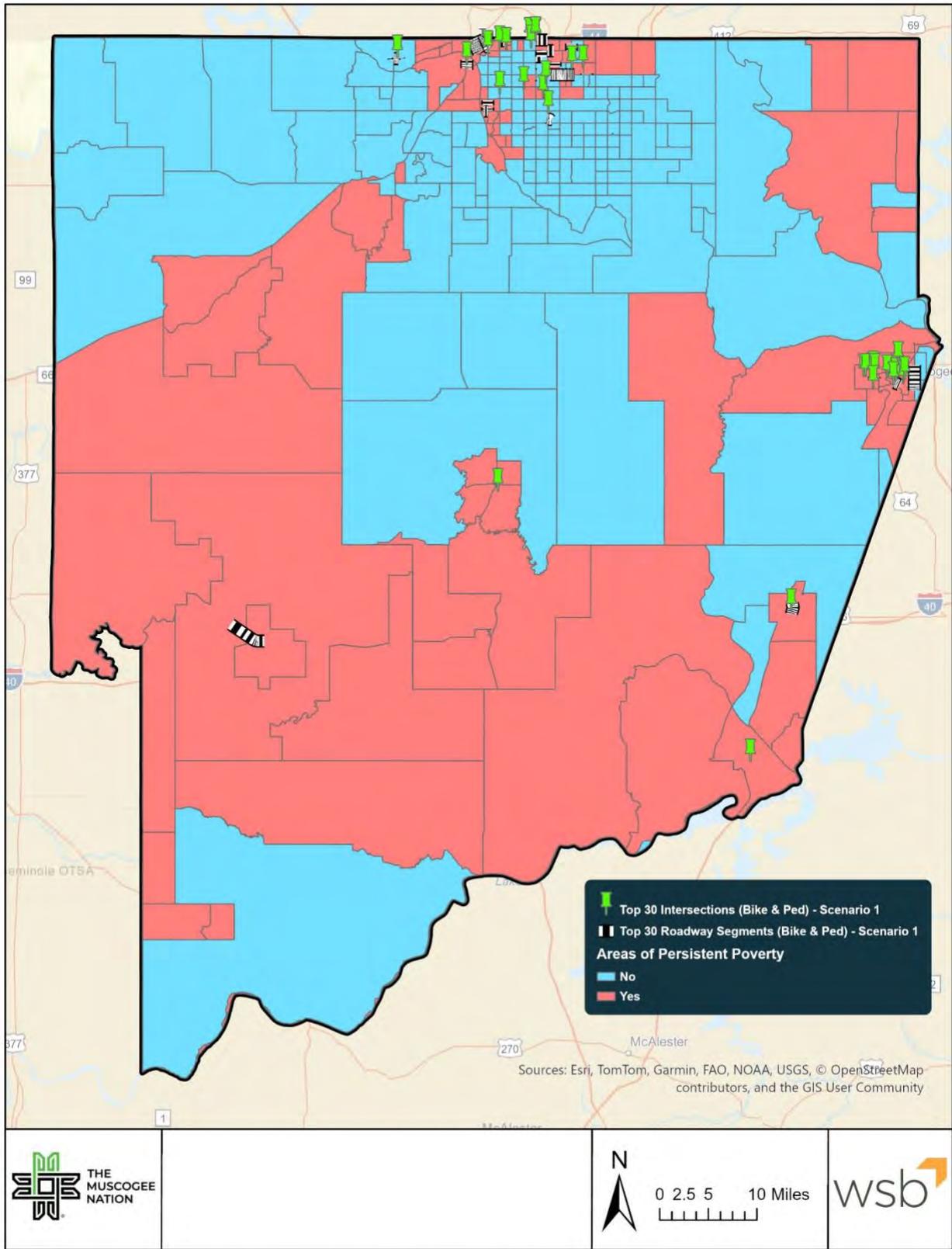


Figure 4: VRU Top 30 Locations – Scenario 1 – With APP

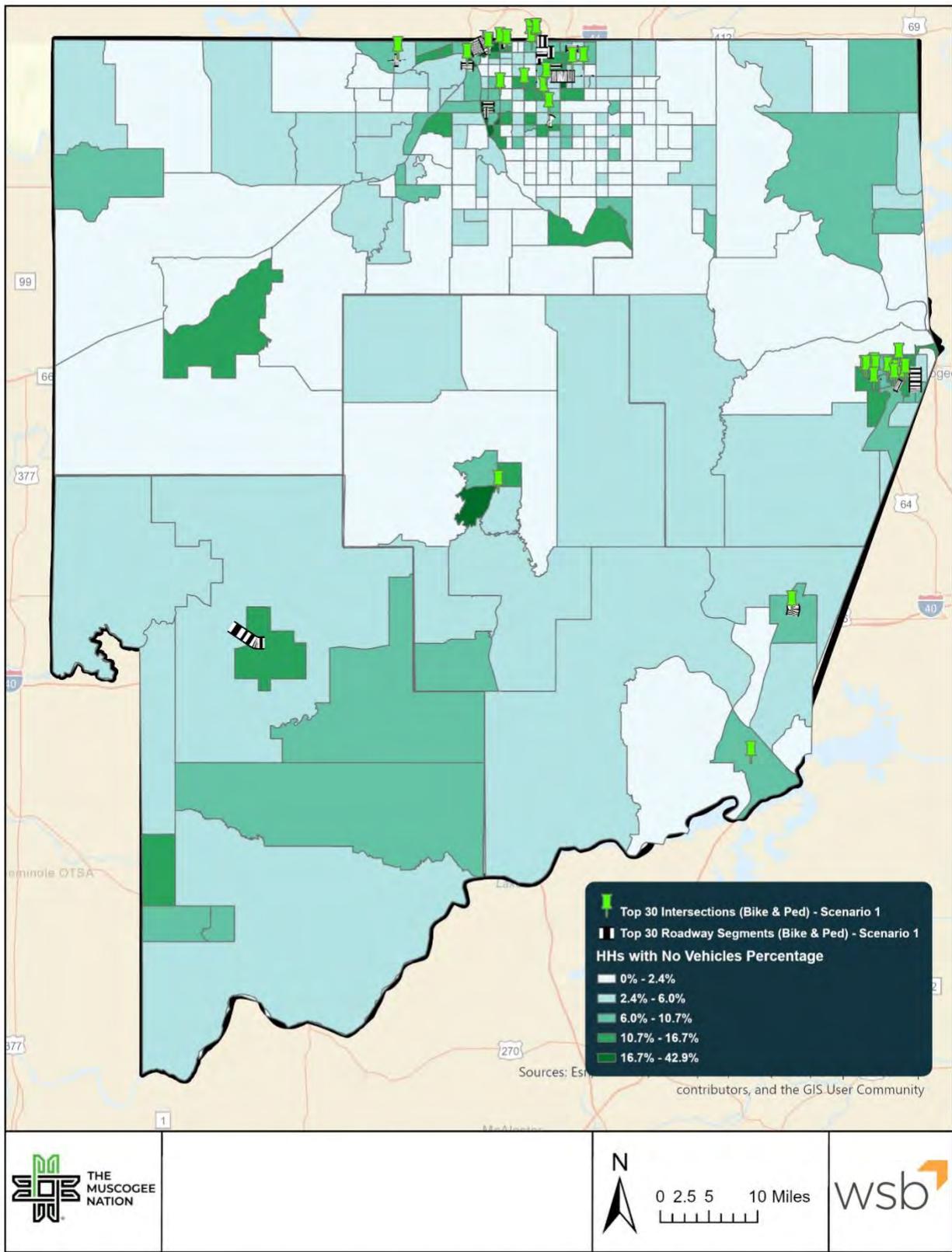


Figure 5: VRU Top 30 Locations – Scenario 1 – With Vehicle Ownership

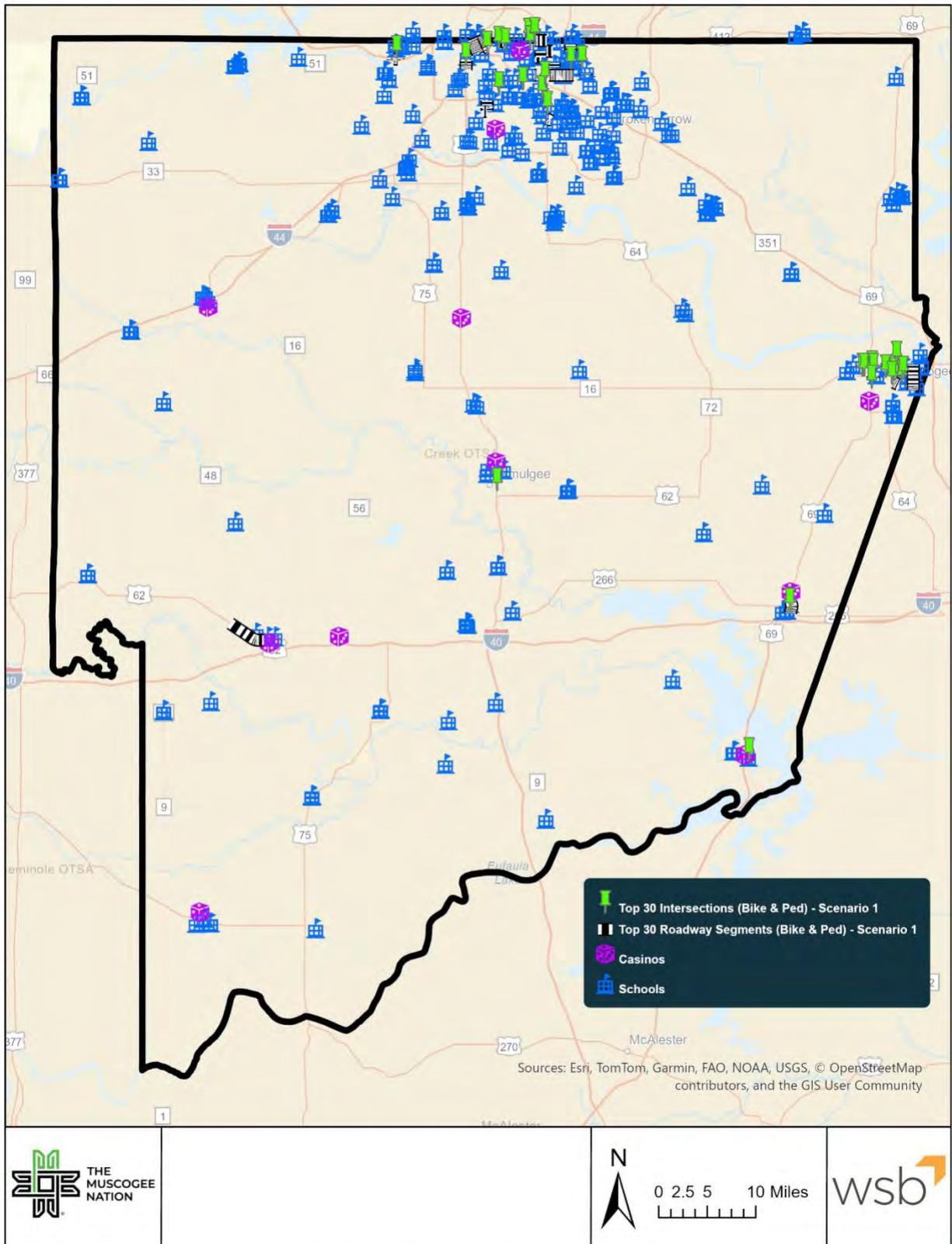


Figure 6: VRU Top 30 Locations – Scenario 1 – With High Impact Locations

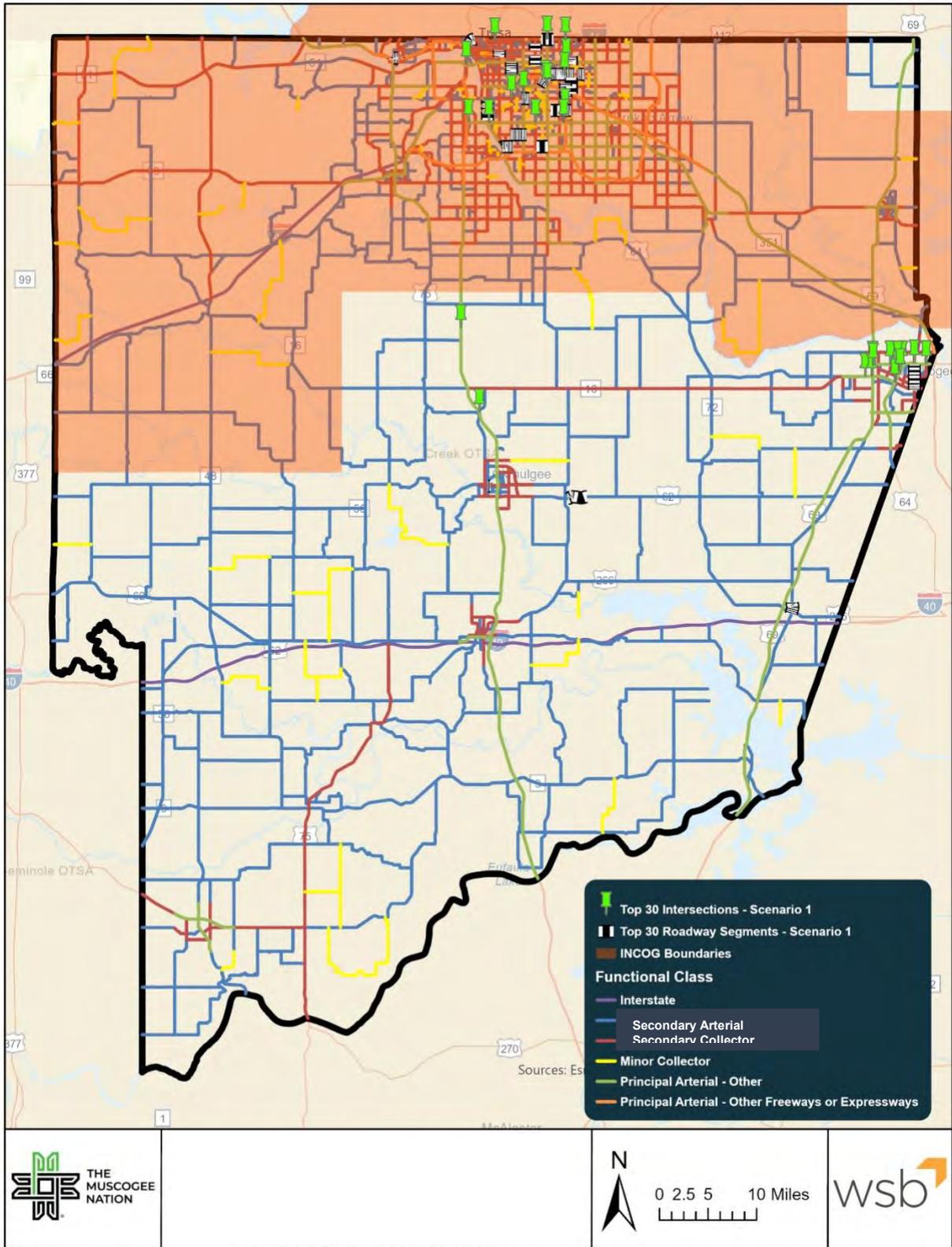


Figure 7: Non-VUR Top 30 Locations– Scenario 1 – With INCOG and Road Classifications

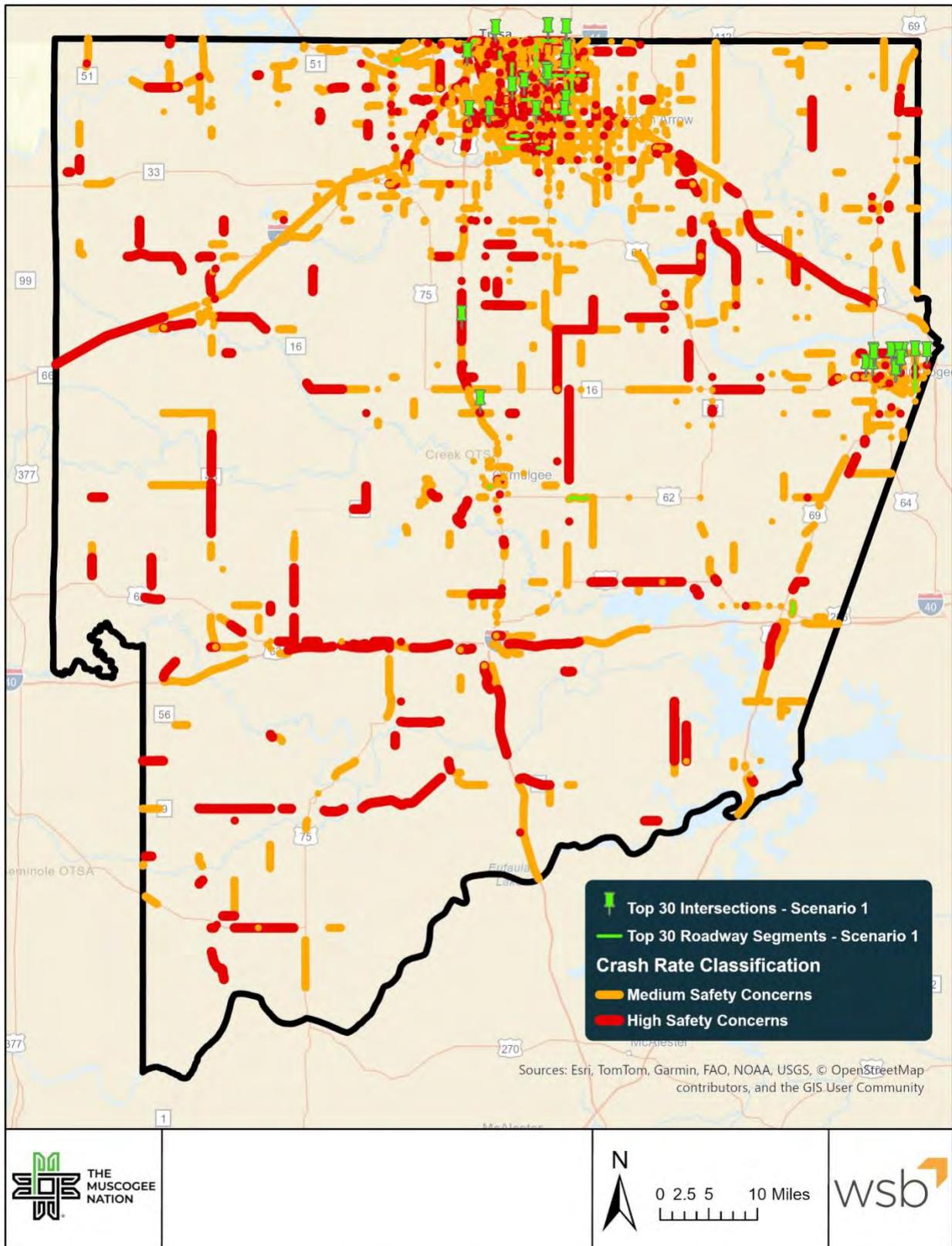


Figure 8: Non-VUR Top 30 Locations – Scenario 1 – With Non-Dominant Population

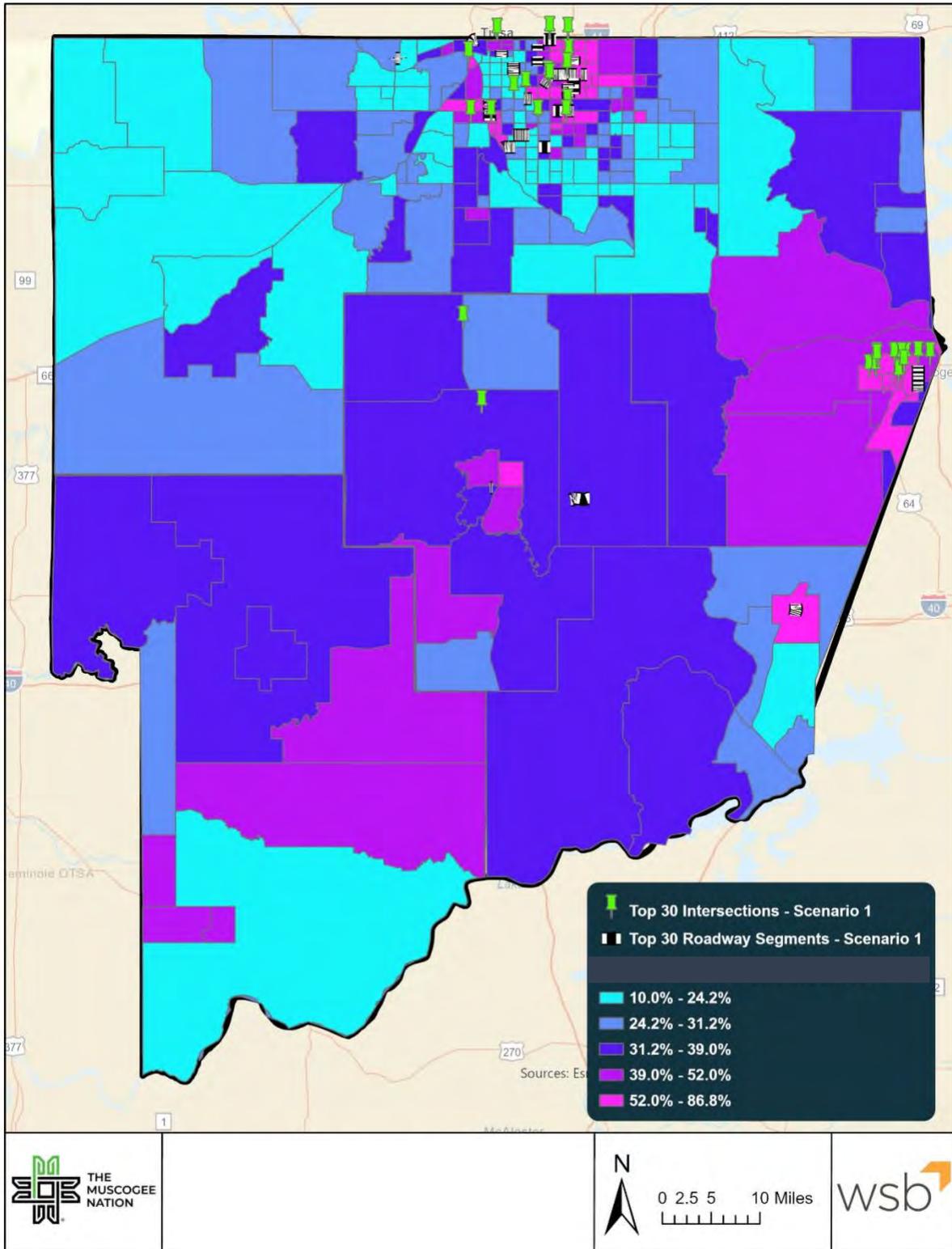


Figure 9: Non-VUR Top 30 Locations – Scenario 1 – With Non-Dominant Population

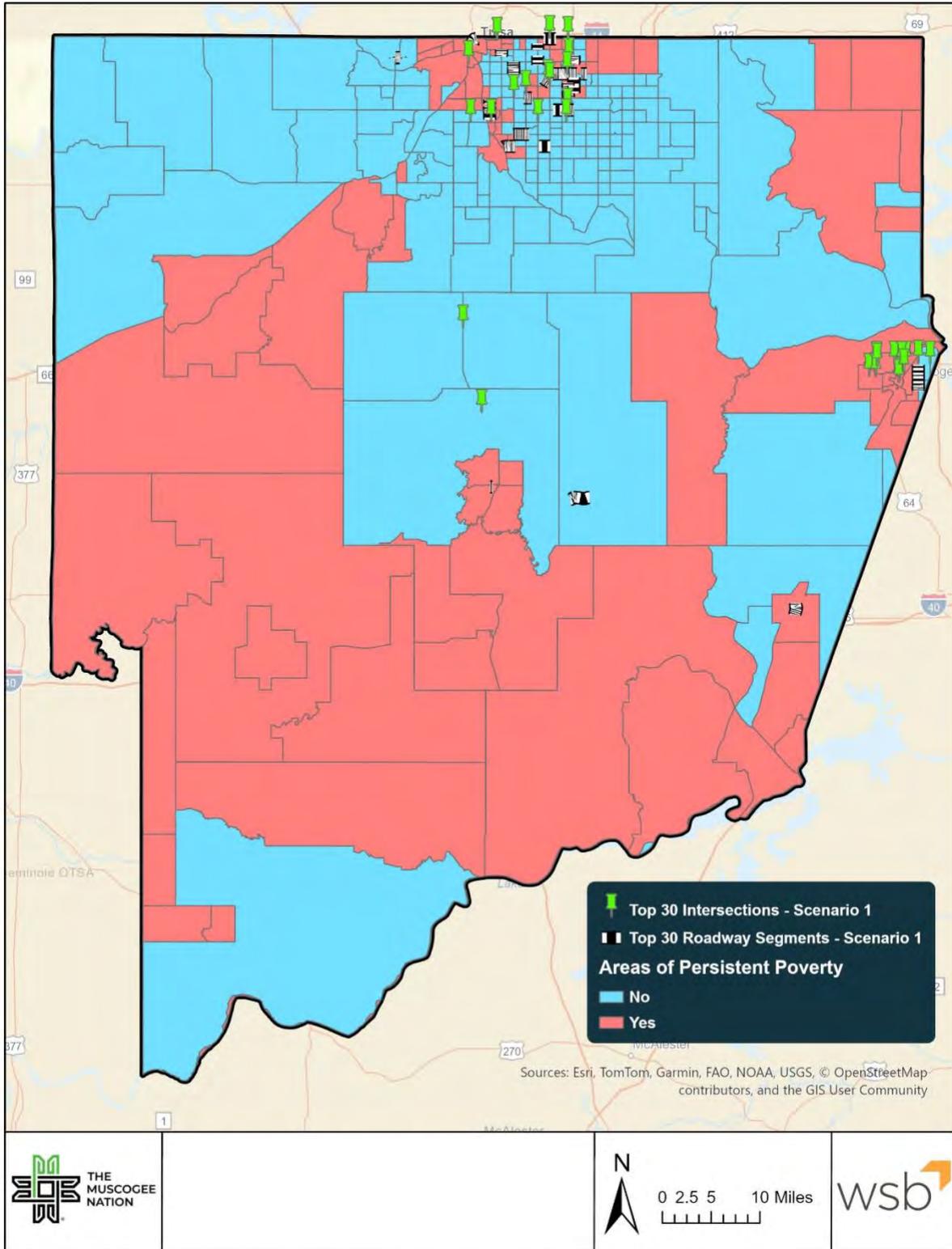


Figure 10: Non-VUR Top 30 Locations – Scenario 1 – With APP

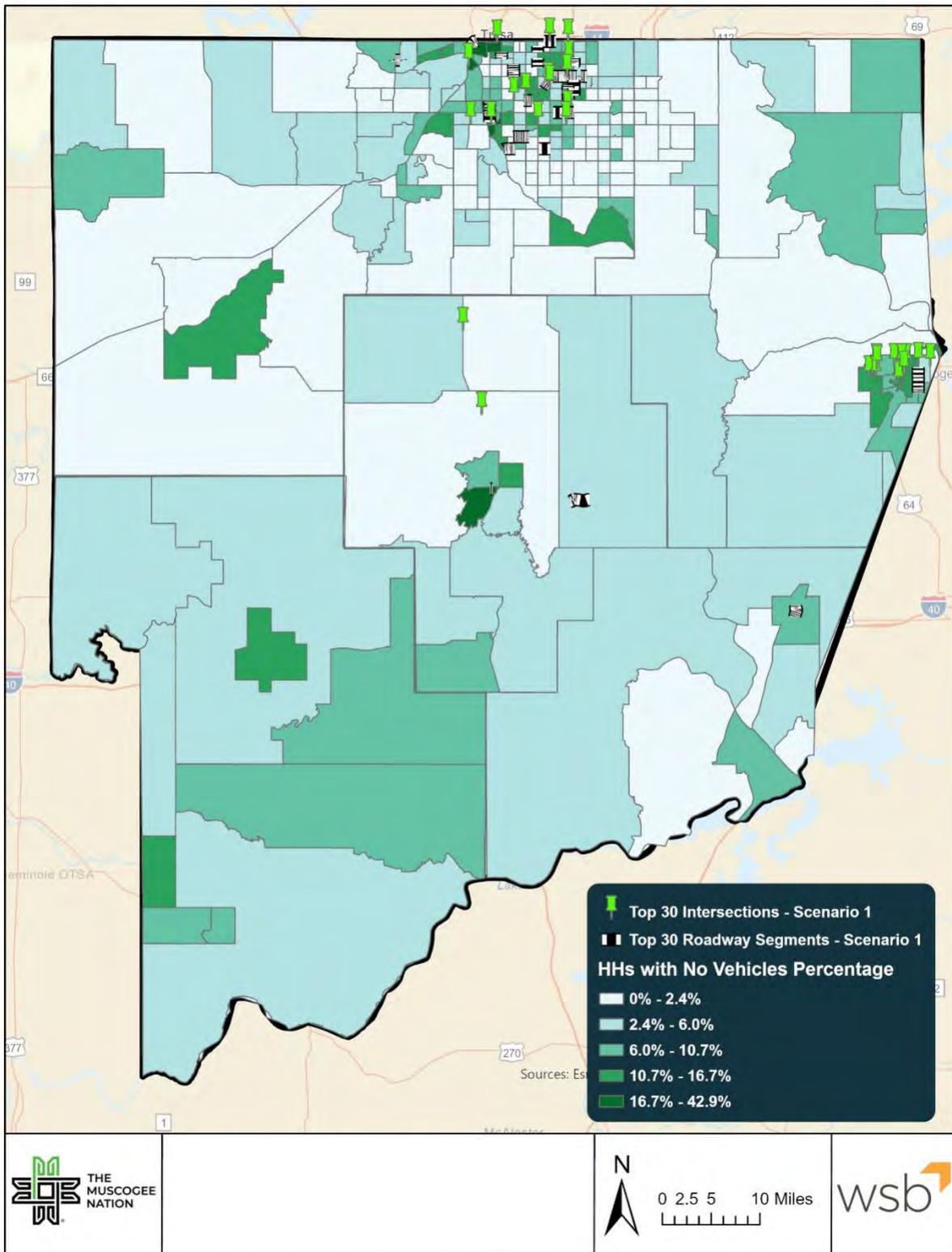


Figure 11: Non-VUR Top 30 Locations – Scenario 1 – With Vehicle Ownership

➤ Hotspot Locations for Scenario 2

Table 8: Top 8 VRU Roadway Segments – Scenario 2

| Rank | Location | Total Number of Crashes (#) | Fatal Crashes (#) | Incapacitating Crashes (#) | Non-Incapacitating Crashes (#) | Pedestrian Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | Bike Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | On HIN |
|------|--|-----------------------------|-------------------|----------------------------|--------------------------------|--|--|--------|
| 1 | S Broadway St from W Jefferson Ave to Maple St, Checotah * | 1 | 0 | 1 | 0 | 1.5 | 1.0 | Yes |
| 2 | US Highway 62 from N 3740 Rd to N 7th St, Okemah * | 2 | 1 | 0 | 0 | 1.7 | 1.0 | Yes |
| 3 | N York St from Old Shawnee Rd to E Okmulgee St, Muskogee * | 2 | 0 | 0 | 2 | 1.0 | 1.0 | Yes |
| 4 | E Okmulgee St from S Main St to Spaulding Blvd, Muskogee * | 2 | 0 | 1 | 0 | 1.5 | 1.0 | No |
| 5 | N 11th St from W Shawnee St to Tamaroa St, Muskogee * | 1 | 0 | 1 | 0 | 1.5 | 1.0 | Yes |
| 6 | S 30th St W Okmulgee St to Columbus St, Muskogee | 1 | 0 | 0 | 0 | 1.1 | 1.0 | No |
| 7 | EW 133 Rd (Highway 270) from N 374 Rd to N 379 St * | 1 | 0 | 1 | 0 | 1.1 | 1.0 | Yes |
| 8 | Chandler Rd from N P St to N York St, Okmulgee | 1 | 0 | 0 | 1 | 1.0 | 1.0 | No |

* Locations that also appear in the non-vulnerable road user list

Table 9: Top 30 Non-VRU Roadway Segments-- Scenario 2

| Rank | Location | Total Number of Crashes (#) | Fatal Crashes (#) | Incapacitating Crashes (#) | Non-Incapacitating Crashes (#) | Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | Rank | On HIN |
|------|--|-----------------------------|-------------------|----------------------------|--------------------------------|---|------|--------|
| 1 | N York St from Old Shawnee Rd to E Okmulgee St, Muskogee | 75 | 0 | 3 | 12 | 1.029 | 1 | Yes |
| 2 | S Broadway St from W Jefferson Ave to Maple St, Checotah | 8 | 0 | 2 | 0 | 1.073 | 2 | Yes |
| 3 | Highway 62 from East of N 6th St Curves, Morris | 7 | 0 | 2 | 2 | 1.118 | 3 | Yes |
| 4 | EW 133 Rd (Highway 270) from N 374 Rd to N 379 St | 10 | 1 | 3 | 1 | 1.062 | 4 | Yes |
| 5 | US Highway 266 from N 4070 Rd to N 4120 Rd | 9 | 2 | 1 | 1 | 1.268 | 5 | Yes |
| 6 | US Highway 62 from N 3740 Rd to N 7th St, Okemah | 7 | 2 | 0 | 0 | 1.100 | 6 | Yes |
| 7 | Hectorville Rd from N 220 Rd to N 250 Rd, Hectorville | 16 | 0 | 3 | 2 | 1.161 | 7 | Yes |
| 8 | Ferguson Rd from Bixby Rd to N 310 Rd | 6 | 0 | 3 | 0 | 1.300 | 8 | Yes |
| 9 | E 7th St from S Okmulgee Ave to S Grand Ave, Okmulgee | 13 | 0 | 1 | 1 | 2.432 | 9 | Yes |
| 10 | Sharp Rd from S 200 Rd to S 205 Rd, Okmulgee | 6 | 1 | 1 | 1 | 1.800 | 10 | Yes |
| 11 | State Highway 9 from State Highway 48 to N 377 | 8 | 2 | 0 | 2 | 1.124 | 11 | Yes |
| 12 | Highway 9 from E 123 to McComb Ave | 16 | 1 | 0 | 3 | 1.079 | 12 | Yes |
| 13 | Highway 56 from EW 1120 Rd to N 3690 Rd, Schoolton | 6 | 1 | 1 | 3 | 1.658 | 13 | Yes |
| 14 | W Highway 16 from S Highway 62 to S 134th St W | 7 | 1 | 1 | 0 | 1.077 | 14 | Yes |
| 15 | State Highway 52 from W Highway 16 to Massingale Rd | 11 | 1 | 1 | 4 | 1.059 | 15 | Yes |
| 16 | Gibson St from N York St to Civitan Park, Muskogee | 6 | 0 | 1 | 0 | 1.078 | 16 | Yes |
| 17 | N 11th St from W Shawnee St to Tamaroa St, Muskogee | 14 | 0 | 1 | 5 | 1.066 | 17 | Yes |
| 18 | US Highway 75 from 3rd St to Bad Creek | 14 | 0 | 1 | 1 | 1.021 | 18 | Yes |
| 19 | E Okmulgee St from S Main St to Spaulding Blvd, Muskogee | 7 | 0 | 1 | 0 | 1.001 | 19 | No |
| 20 | Conifer Rd from Highway 75 to Wilson Rd | 10 | 1 | 0 | 0 | 1.200 | 20 | Yes |
| 21 | Highway 75 from E 1205 to N 385 | 9 | 0 | 1 | 1 | 1.037 | 21 | Yes |
| 22 | State Highway 56 from US Highway 75 to N Mission Ln | 8 | 1 | 0 | 1 | 1.197 | 22 | Yes |
| 23 | E Harris Rd from N Main St to N York St, Muskogee | 6 | 0 | 1 | 0 | 1.126 | 23 | Yes |
| 24 | Lake Rd from E 1130 Rd to D 1106 Rd | 7 | 0 | 1 | 2 | 1.286 | 24 | Yes |
| 25 | Texanna Rd from S 4184 Rd to S 4190 Rd | 6 | 1 | 0 | 0 | 1.268 | 25 | Yes |
| 26 | Wainright Rd from US Highway 69 to S 104th St W | 7 | 0 | 1 | 1 | 1.045 | 26 | Yes |
| 27 | Bixby Rd from Highway 16 to Ferguson Rd | 7 | 0 | 1 | 3 | 1.054 | 27 | Yes |
| 28 | Bixby Rd from Ferguson Rd to Hectorville Rd | 7 | 0 | 1 | 1 | 1.045 | 28 | Yes |
| 29 | US Highway 75 from E 134 Rd to E 138 Rd | 7 | 0 | 1 | 1 | 1.018 | 29 | Yes |
| 30 | W Gentry St from SW 2nd St to Broadway St, Checotah | 7 | 0 | 0 | 0 | 1.003 | 30 | No |

Table 10: Top 14 VRU Intersections – Scenario 2

| Rank | Location | Total Number of Crashes (#) | Fatal Crashes (#) | Incapacitating Crashes (#) | Non-Incapacitating Crashes (#) | Pedestrian Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | Bike Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | On HIN |
|------|--|-----------------------------|-------------------|----------------------------|--------------------------------|--|--|--------|
| 1 | W Broadway St & N 11th St, Muskogee | 1 | 0 | 0 | 1 | 1.000 | 5.805 | Yes |
| 2 | W Okmulgee St & N 43rd St, Muskogee | 1 | 0 | 0 | 1 | 1.000 | 5.704 | Yes |
| 3 | N Main St & Court St, Muskogee * | 1 | 0 | 1 | 0 | 1.000 | 2.711 | Yes |
| 4 | Eastside Blvd & Callahan St, Muskogee | 1 | 0 | 0 | 1 | 1.000 | 4.318 | Yes |
| 5 | E Main St & S Elgin Ave, Muskogee | 1 | 0 | 0 | 1 | 1.000 | 2.256 | No |
| 6 | W Gentry Ave & SW 1st St, Checotah | 1 | 0 | 0 | 0 | 1.000 | 1.032 | No |
| 7 | W Shawnee St & Chicago St, Muskogee* | 1 | 0 | 0 | 0 | 1.000 | 1.059 | Yes |
| 8 | N 32nd St & Court St, Muskogee | 1 | 0 | 0 | 0 | 1.004 | 1.000 | Yes |
| 9 | Houston St & Eastside Blvd, Muskogee | 1 | 0 | 0 | 0 | 1.004 | 1.000 | Yes |
| 10 | W Okmulgee St & Honor Heights Dr, Muskogee * | 1 | 0 | 0 | 0 | 1.003 | 1.000 | Yes |
| 11 | W Okmulgee St & N 30th St, Muskogee | 1 | 0 | 1 | 0 | 1.193 | 1.000 | No |
| 12 | E Selmon Rd & N 2nd St, Eufaula | 1 | 0 | 0 | 0 | 1.003 | 1.000 | No |
| 13 | S 32nd St & Border Ave, Muskogee | 1 | 0 | 0 | 1 | 1.155 | 1.000 | No |
| 14 | Highway 75 & E 13th St, Okmulgee | 1 | 0 | 0 | 0 | 1.000 | 1.120 | No |

* Locations that also appear in the non-vulnerable road user list

Table 11: Top 30 Non-VRU Intersections– Scenario 2

| Rank | Location | Total Number of Crashes (#) | Fatal Crashes (#) | Incapacitating Crashes (#) | Non-Incapacitating Crashes (#) | Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | High Crash Reoccurrence (Years) - Normalized | On HIN |
|------|--|-----------------------------|-------------------|----------------------------|--------------------------------|---|--|--------|
| 1 | W Shawnee St & N Main St, Muskogee | 62 | 0 | 3 | 1 | 1.243 | 10 | Yes |
| 2 | W Shawnee St & N York St, Muskogee | 84 | 0 | 2 | 5 | 1.401 | 10 | Yes |
| 3 | W Shawnee St & N County Club Rd, Muskogee | 77 | 0 | 3 | 7 | 1.595 | 10 | Yes |
| 4 | W Shawnee St & N 32nd St W, Muskogee | 70 | 0 | 2 | 4 | 1.538 | 10 | Yes |
| 5 | W Shawnee St & N 6th St, Muskogee | 59 | 0 | 2 | 4 | 1.418 | 10 | Yes |
| 6 | N Main St & Court St, Muskogee | 27 | 0 | 1 | 5 | 1.274 | 4.6 | Yes |
| 7 | Highway 75 and Ferguson Rd | 26 | 1 | 2 | 3 | 7.849 | 2.8 | Yes |
| 8 | W Okmulgee St & Honor Height Dr, Muskogee | 49 | 0 | 1 | 9 | 1.809 | 10 | Yes |
| 9 | W Okmulgee St & N 32nd St, Muskogee | 77 | 0 | 1 | 3 | 2.457 | 10 | No |
| 10 | N Main St and Kinsley St, Muskogee | 7 | 0 | 4 | 1 | 1.074 | 1 | Yes |
| 11 | W Shawnee St & Chicago St, Muskogee | 31 | 0 | 1 | 6 | 10.000 | 6.4 | Yes |
| 12 | Okmulgee Expy & Will Sampson Rd, Preston | 12 | 0 | 2 | 1 | 2.915 | 2.8 | Yes |
| 13 | N 32nd St & W Broadway St, Muskogee | 29 | 0 | 2 | 1 | 1.157 | 4.6 | Yes |
| 14 | S Main St & W Okmulgee St, Muskogee | 27 | 0 | 0 | 3 | 1.281 | 4.6 | Yes |
| 15 | W Shawnee St & N 11th St, Muskogee | 48 | 0 | 0 | 5 | 3.436 | 10 | Yes |
| 16 | N 32nd St & Tahlequah St, Muskogee | 43 | 0 | 0 | 4 | 3.816 | 10 | Yes |
| 17 | Highway 75 & Hectorville Rd | 15 | 0 | 4 | 2 | 1.103 | 1 | Yes |
| 18 | W Okmulgee St & N 24th St, Muskogee | 34 | 0 | 1 | 5 | 1.386 | 6.4 | Yes |
| 19 | S 7th St & Elgin St, Muskogee | 16 | 0 | 2 | 3 | 4.554 | 1 | Yes |
| 20 | Highway 266 & S 4170 Rd | 6 | 1 | 1 | 0 | 2.775 | 1 | Yes |
| 21 | W Shawnee Rd & N 17th St, Muskogee | 8 | 0 | 2 | 3 | 2.748 | 1 | Yes |
| 22 | W Okmulgee St & N 54th St, Muskogee | 18 | 0 | 1 | 3 | 2.460 | 2.8 | Yes |
| 23 | N Woody Guthrie St & W Columbia St, Okemah | 14 | 0 | 2 | 1 | 1.317 | 2.8 | Yes |
| 24 | N Highway 64 & W 10th St N, Jamesville | 7 | 0 | 2 | 0 | 3.072 | 1 | Yes |
| 25 | N York St & Chandler Rd, Muskogee | 34 | 0 | 0 | 4 | 1.336 | 6.4 | Yes |
| 26 | US Highway 64 & Smith Ferry Rd | 17 | 0 | 2 | 3 | 1.718 | 1 | Yes |
| 27 | E Peak Blvd & Queens Rd, Muskogee | 8 | 1 | 0 | 1 | 1.469 | 1 | Yes |
| 28 | Fredonia St & Eastside Blvd, Muskogee | 22 | 0 | 1 | 3 | 1.708 | 2.8 | Yes |
| 29 | Highway 56 & Highway 48 | 10 | 0 | 1 | 0 | 1.737 | 1 | Yes |
| 30 | S York St & E Hancock St, Muskogee | 12 | 0 | 2 | 3 | 1.099 | 1 | Yes |

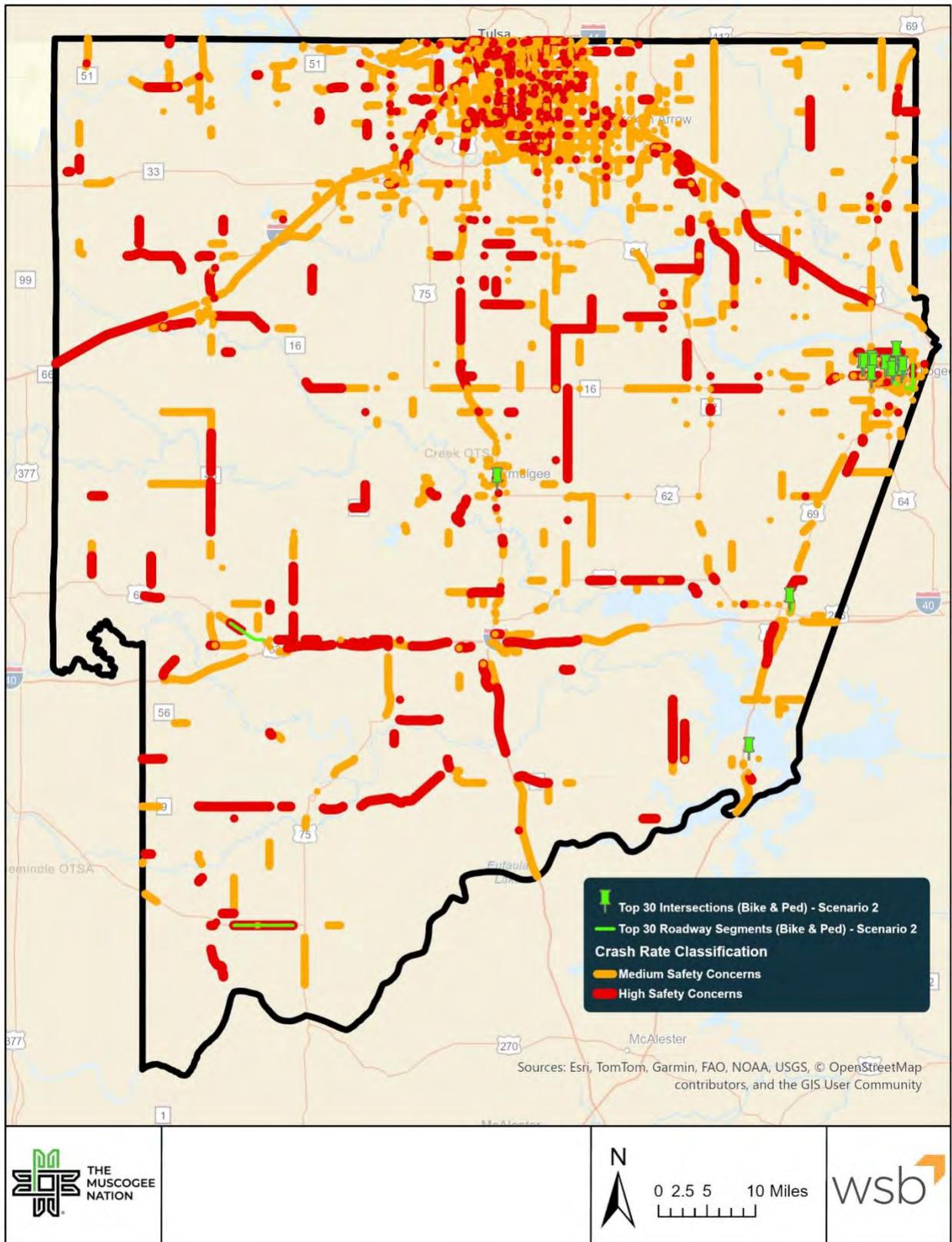


Figure 14: VRU - Top 8 Roadway Segments & 14 Intersections – Scenario 2 – With High Injury Network

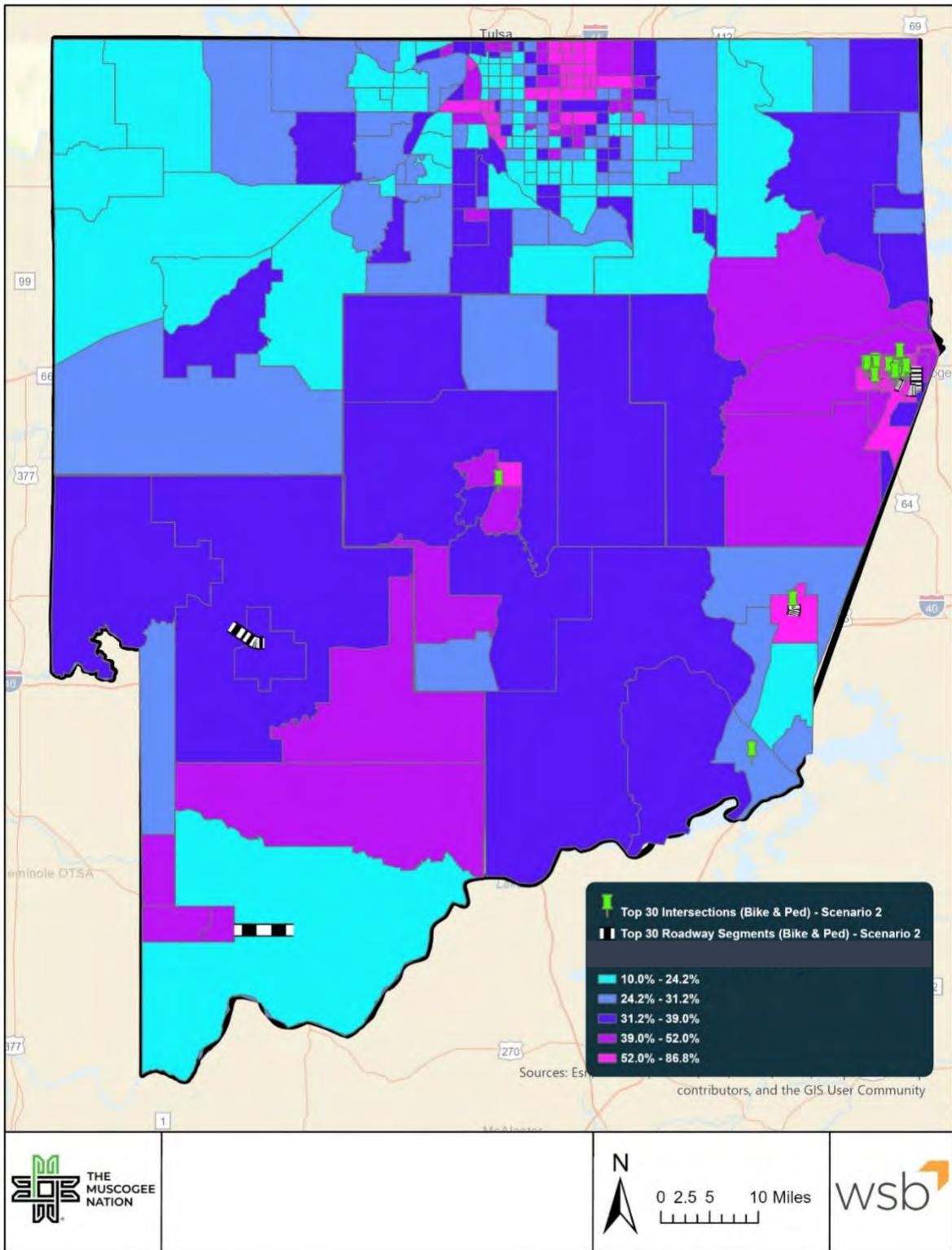


Figure 15: VRU - Top 8 Roadway Segments & 14 Intersections – Scenario 2 – With Non-Dominant Population

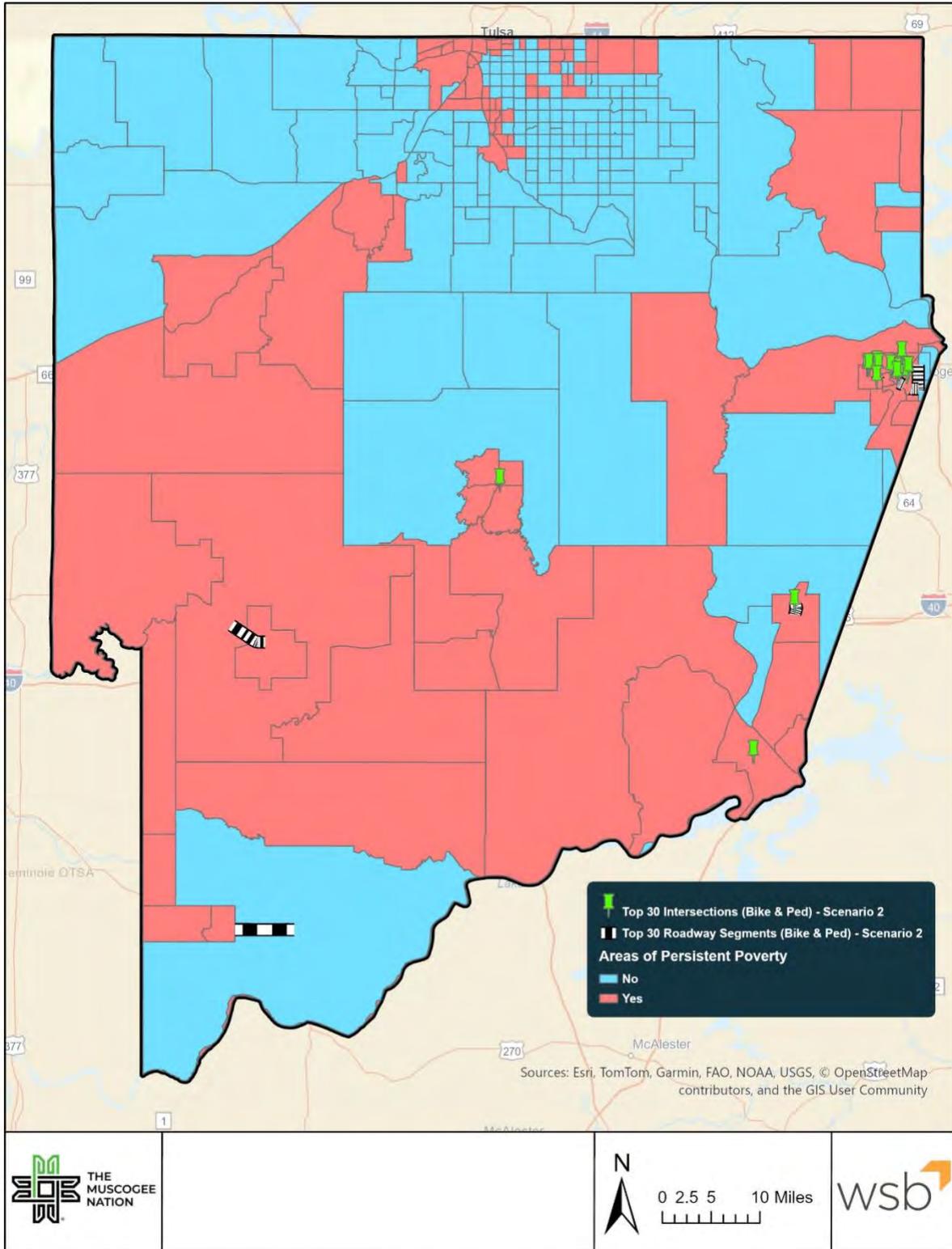


Figure 16: VRU - Top 8 Roadway Segments & 14 Intersections – Scenario 2 – With APP

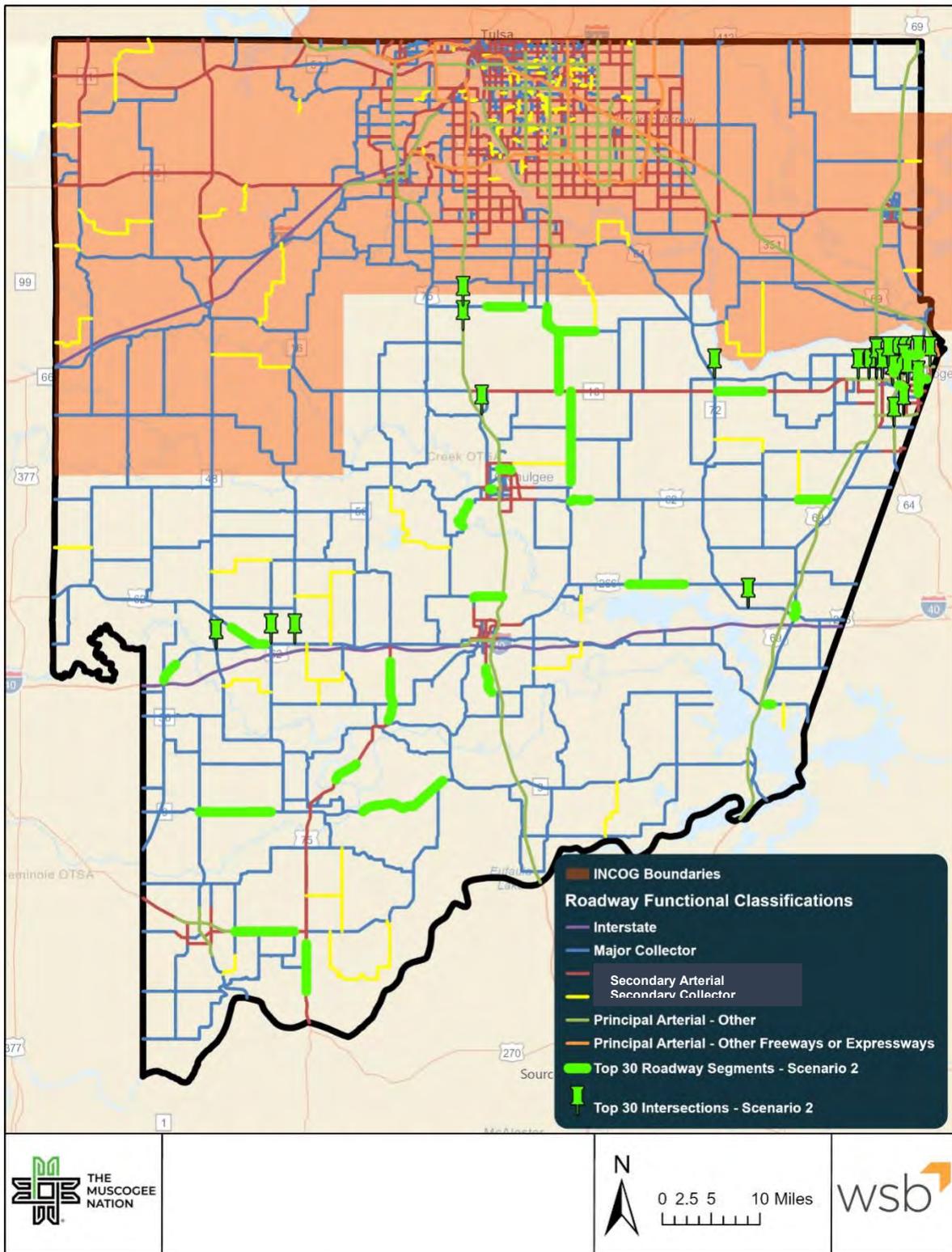


Figure 19: Non-VRU - Top 30 Locations– Scenario 2 – With INCOG and Road Classifications

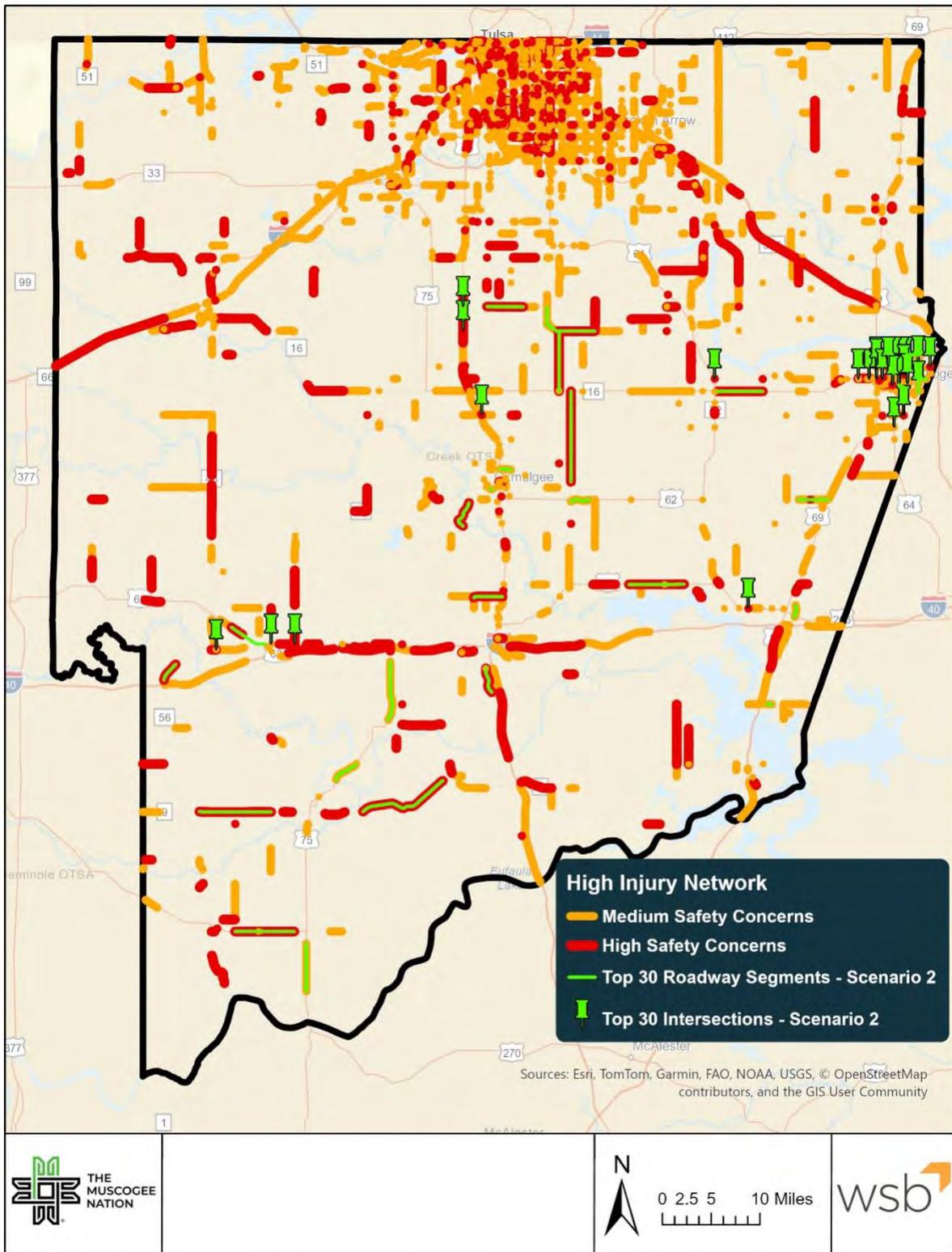


Figure 20: Non-VRU - Top 30 Locations – Scenario 2 – With High Injury Network

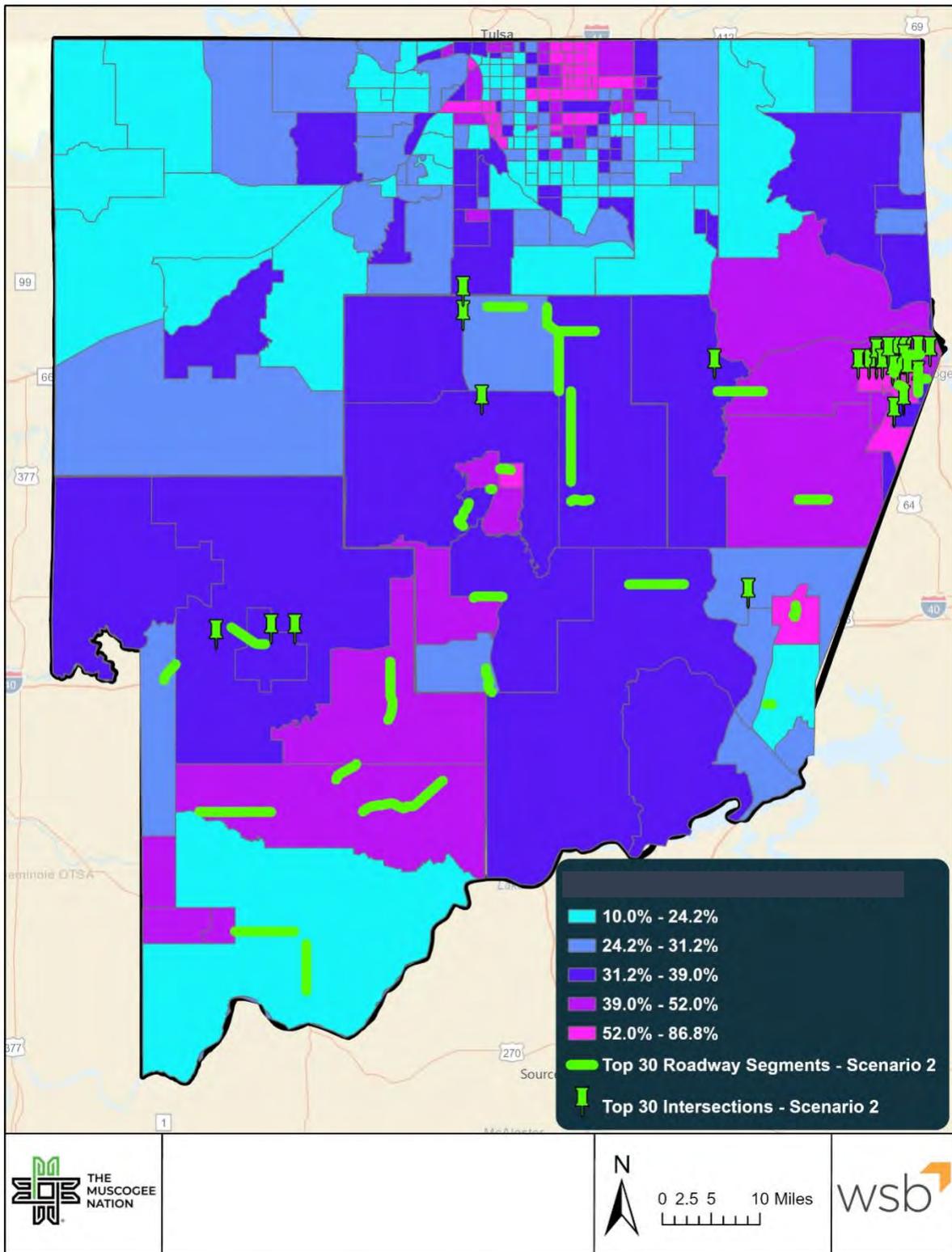


Figure 21: Non-VRU - Top 30 Locations – Scenario 2 – With Non-Dominant Population

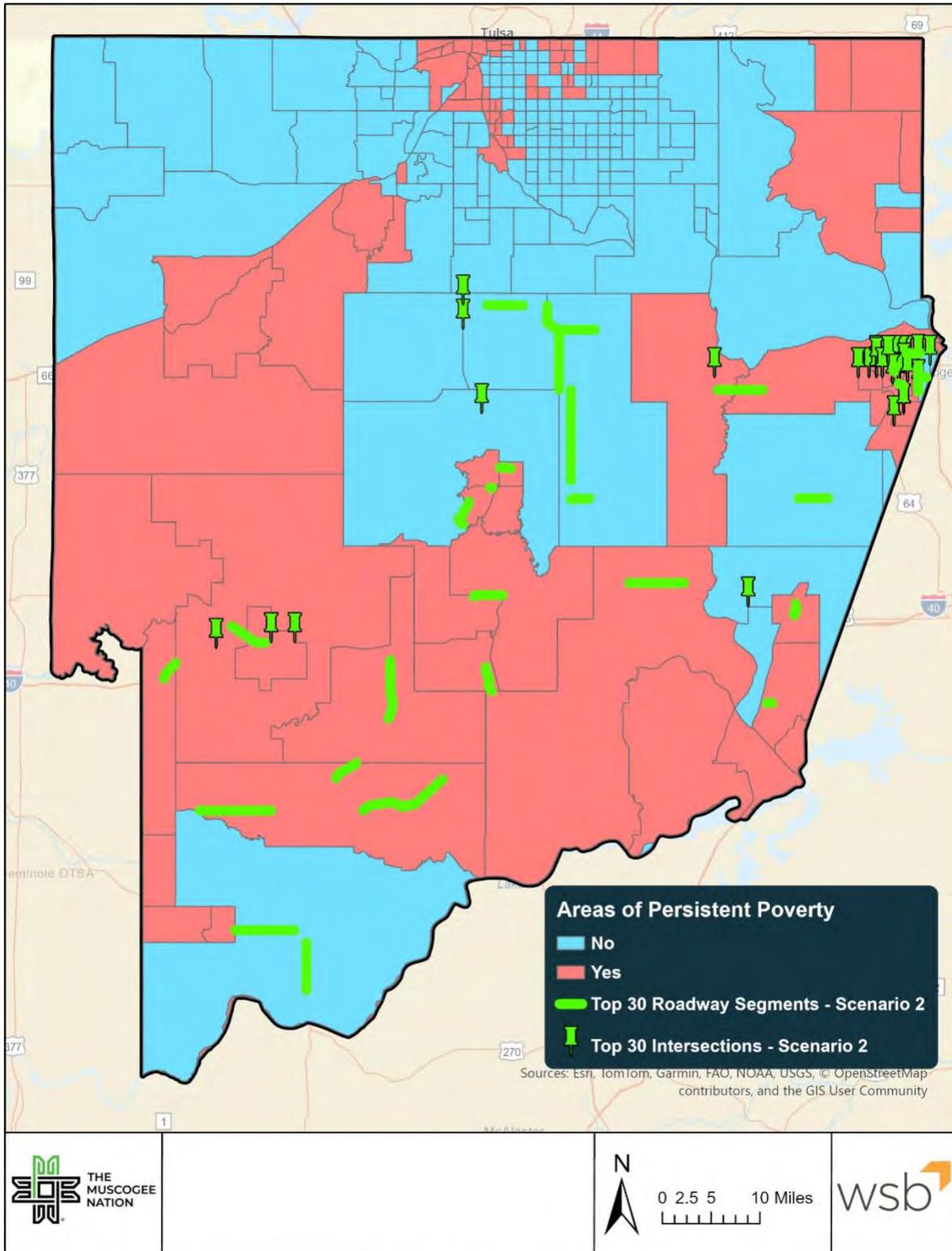


Figure 22: Non-VRU - Top 30 Locations – Scenario 2 – With APP

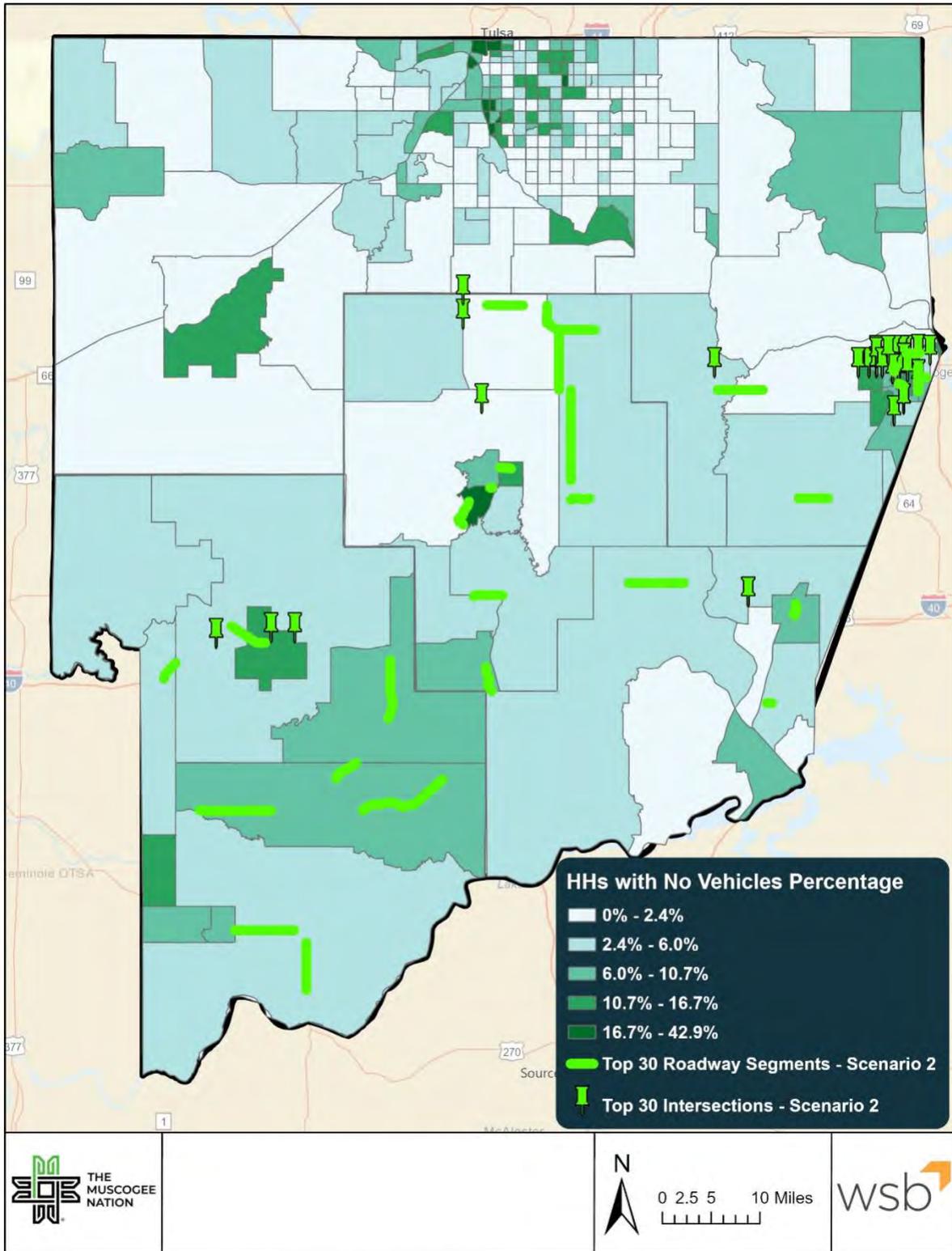


Figure 23: Non-VRU - Top 30 Locations – Scenario 2 – With Vehicle Ownership

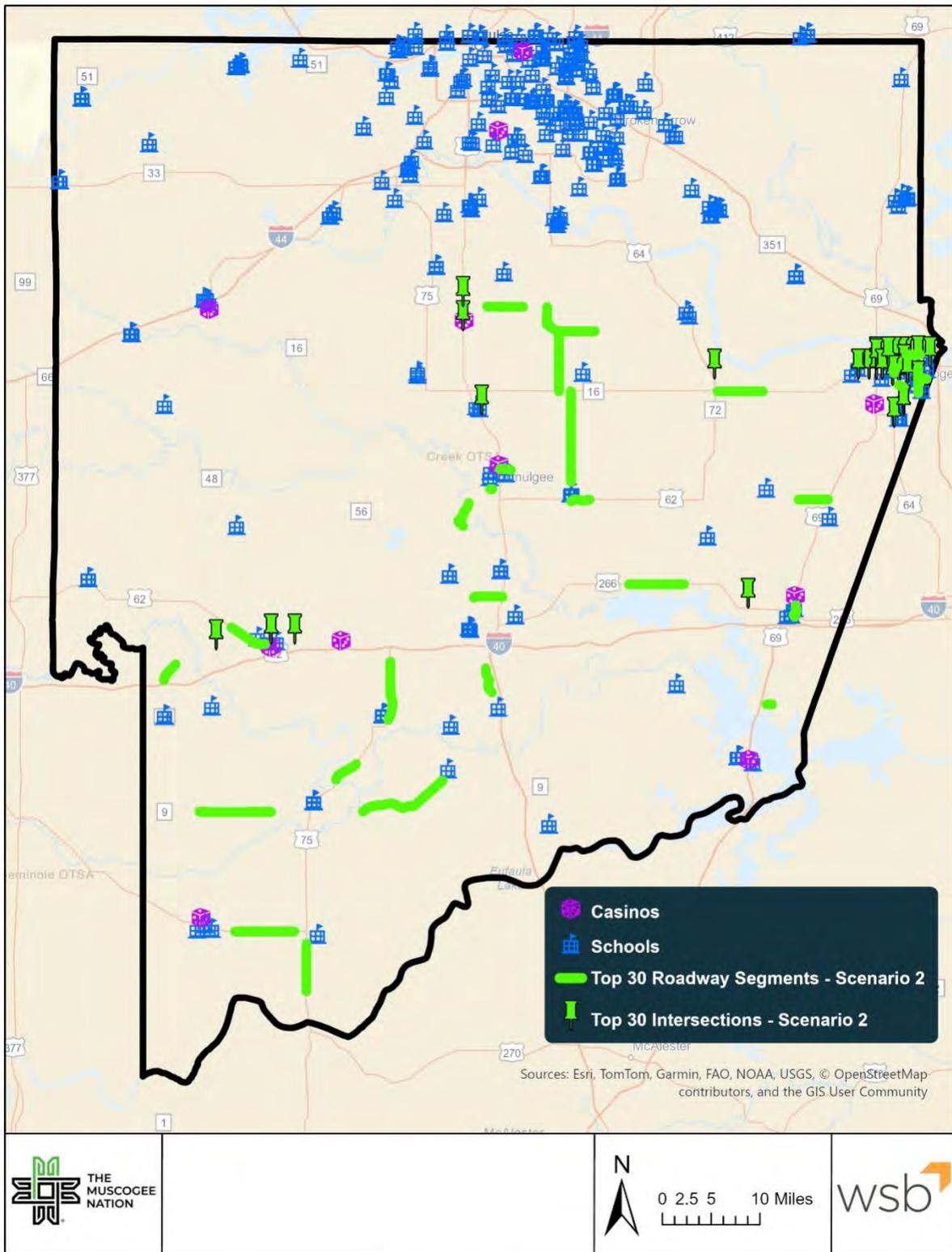


Figure 24: Non-VRU - Top 30 Locations – Scenario 2 – With High Impact Locations

➤ **Selection of Top 20 Locations Following Scenario 2:**

As the next step in identifying the list of hotspot locations, the top **twenty (20)** roadway segments and intersections—combining both vulnerable road user (VRU) and non-VRU locations—were selected. This selection was made under **Scenario 2**, which prioritizes locations outside the INCOG area and focuses on roadways other than Interstates, Freeways, and Major Arterials.

Steps for identifying the top 20 locations from the initial 30

1. **Merging Roadway Segments:**

Segments in close proximity along the same corridor with similar Annual Average Daily Traffic (AADT) were combined and treated as a single segment.

2. **Revaluation and Rescoring:**

After merging roadway segments, the analysis was rerun, treating the combined segments as one. Relevant attributes were summed, and the locations were restored based on the updated set of segments. This process was applied to both VRU and non-VRU lists.

3. **Selection:**

Overlapping locations between the VRU and non-VRU lists were retained. The remaining locations were selected by comparing safety measures and other relevant factors, resulting in a list of twenty (20) roadway segments and intersections.

Table 12 and **Table 13** present the selected roadway segments and intersections, respectively, ranked from 1 to 20, with 1 indicating the highest priority. Each location is identified as originating from either the VRU list or the non-VRU list.

Figure 25 to **Figure 30** visualize the selected locations in relation to key factors, providing updated versions of the initial 30-location maps, now reflecting the 20 locations under Scenario 2.

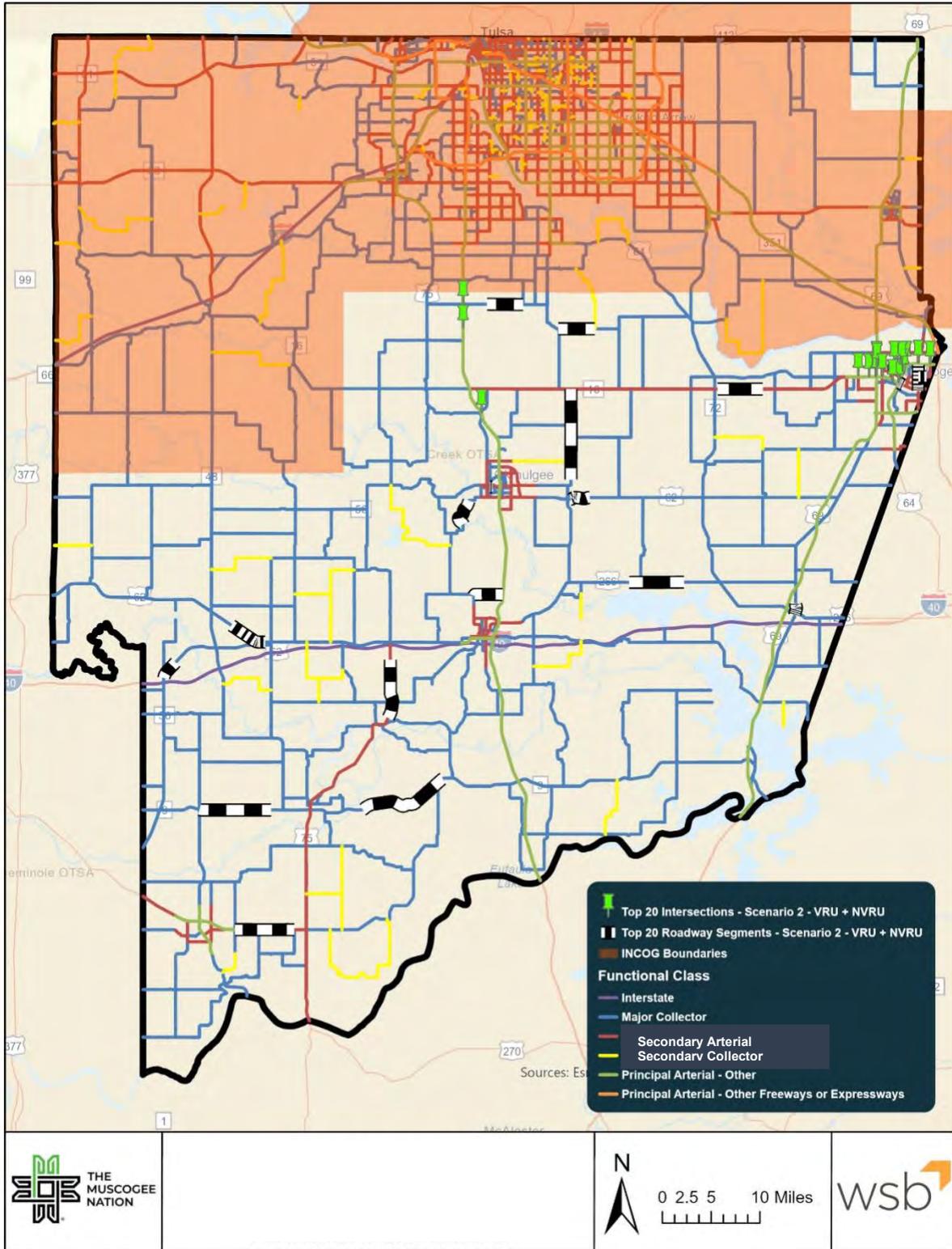


Figure 25: Top 20 Locations – With INCOG and Road Classifications

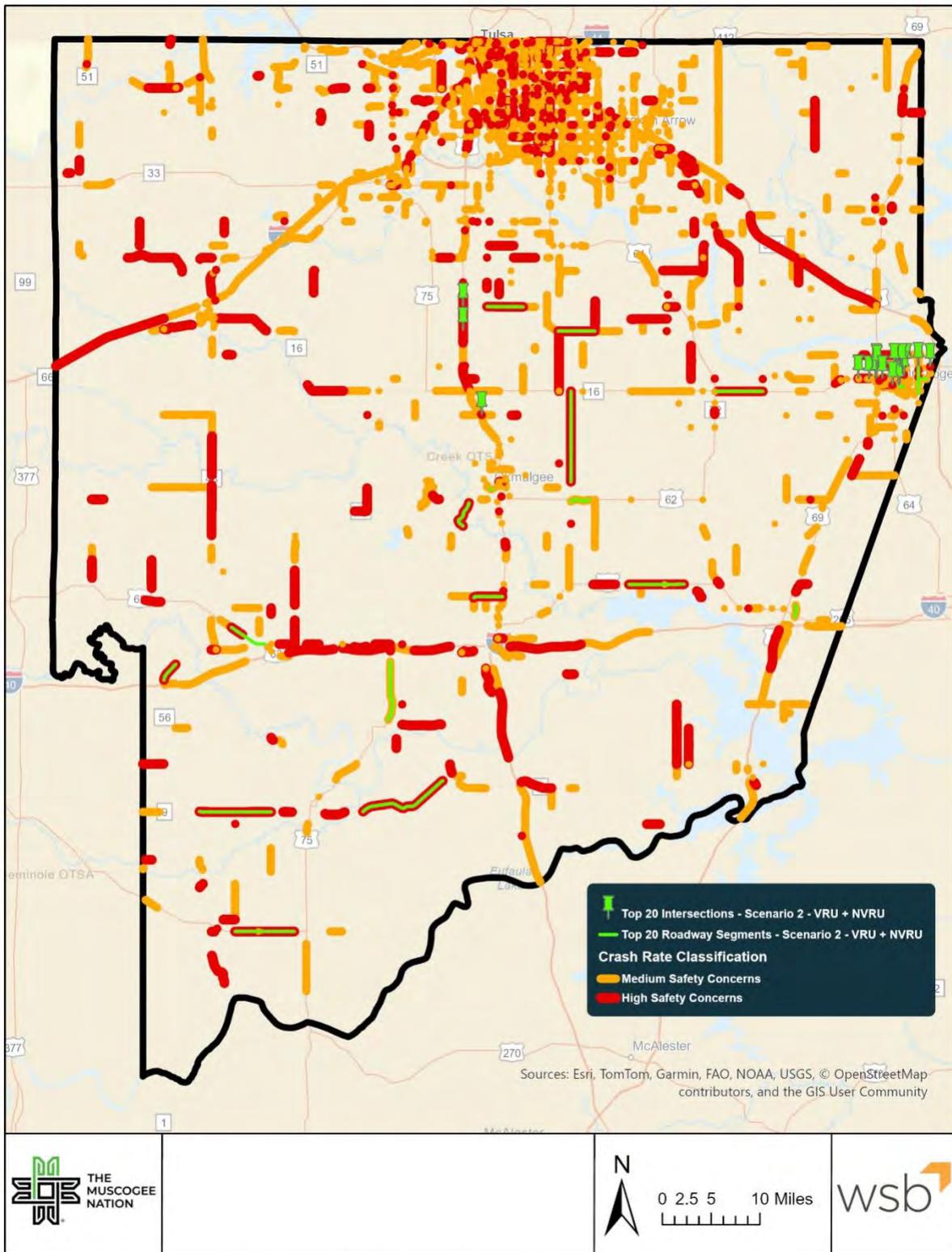


Figure 26: Top 20 Locations – With High Injury Network

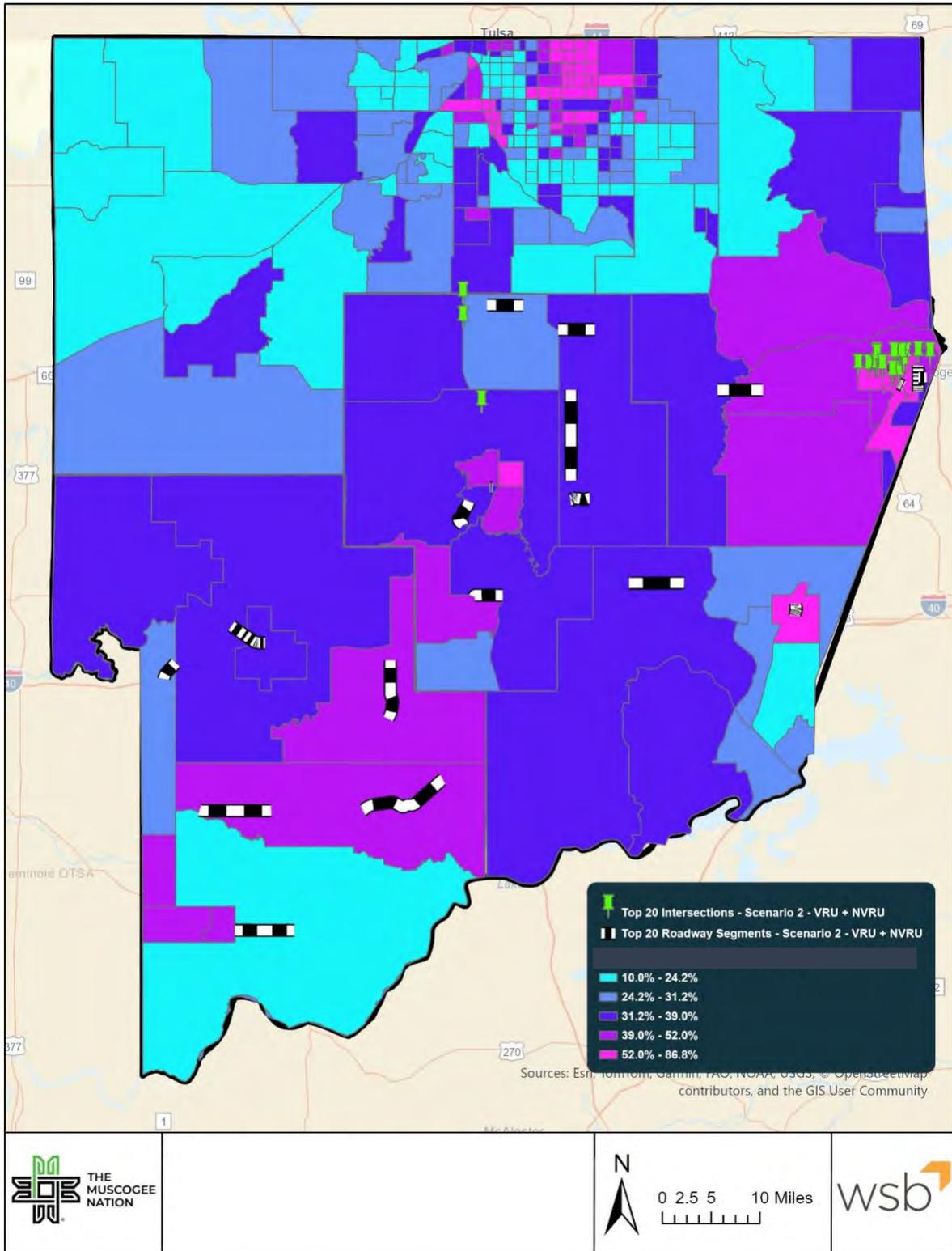


Figure 27: Top 20 Locations – With Non-Dominant Population

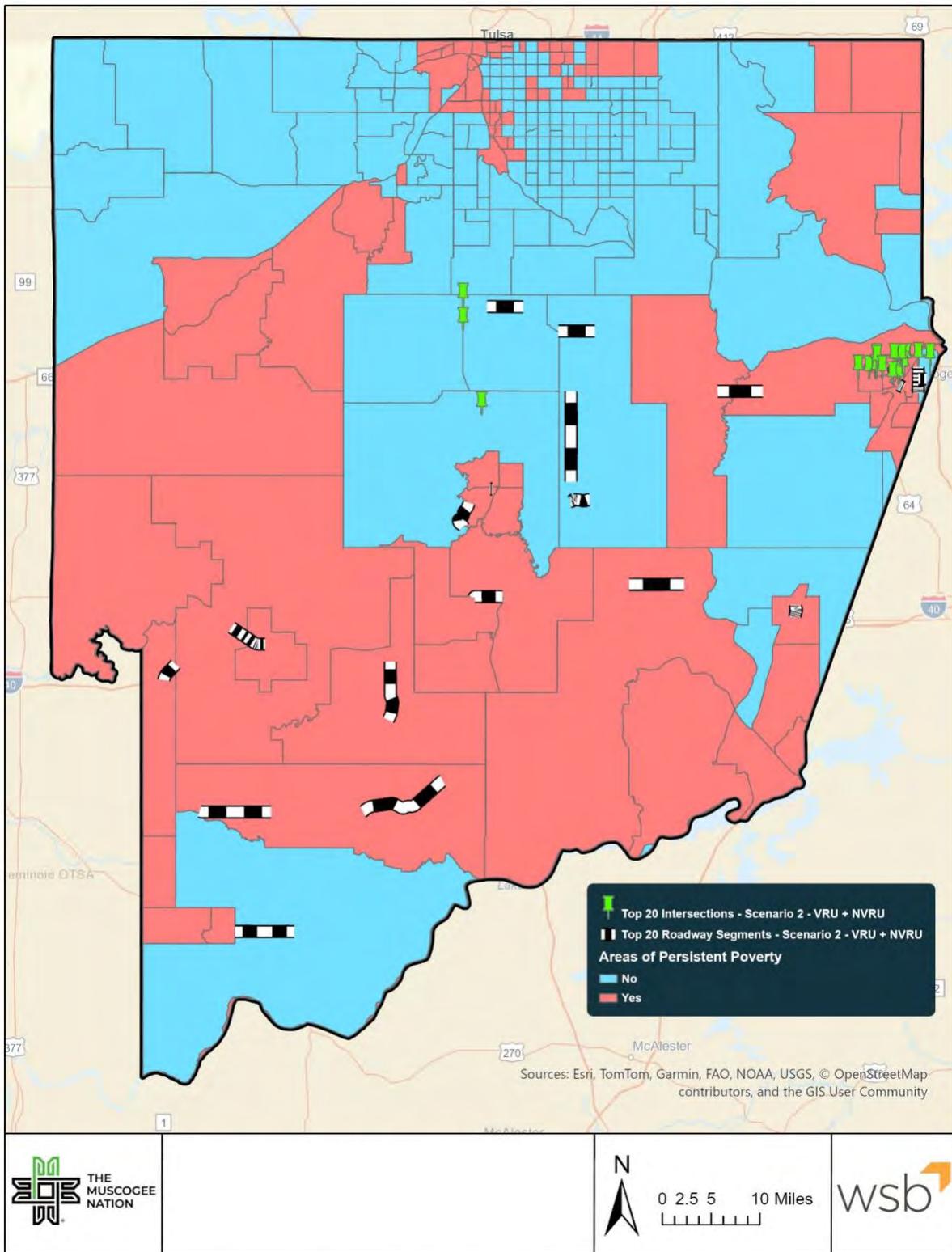


Figure 28: Top 20 Locations – With APP

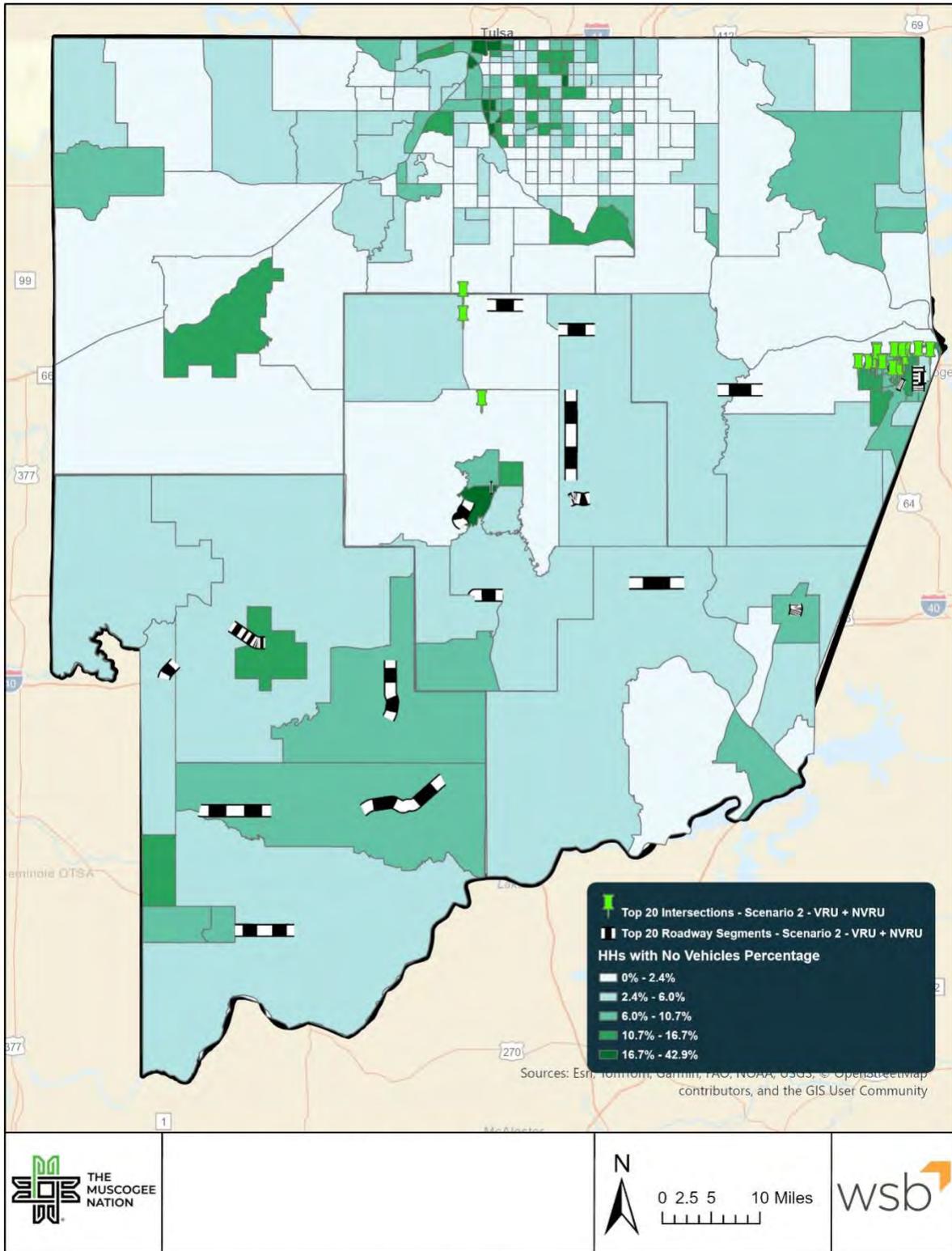


Figure 29: Top 20 Locations – With Vehicle Ownership

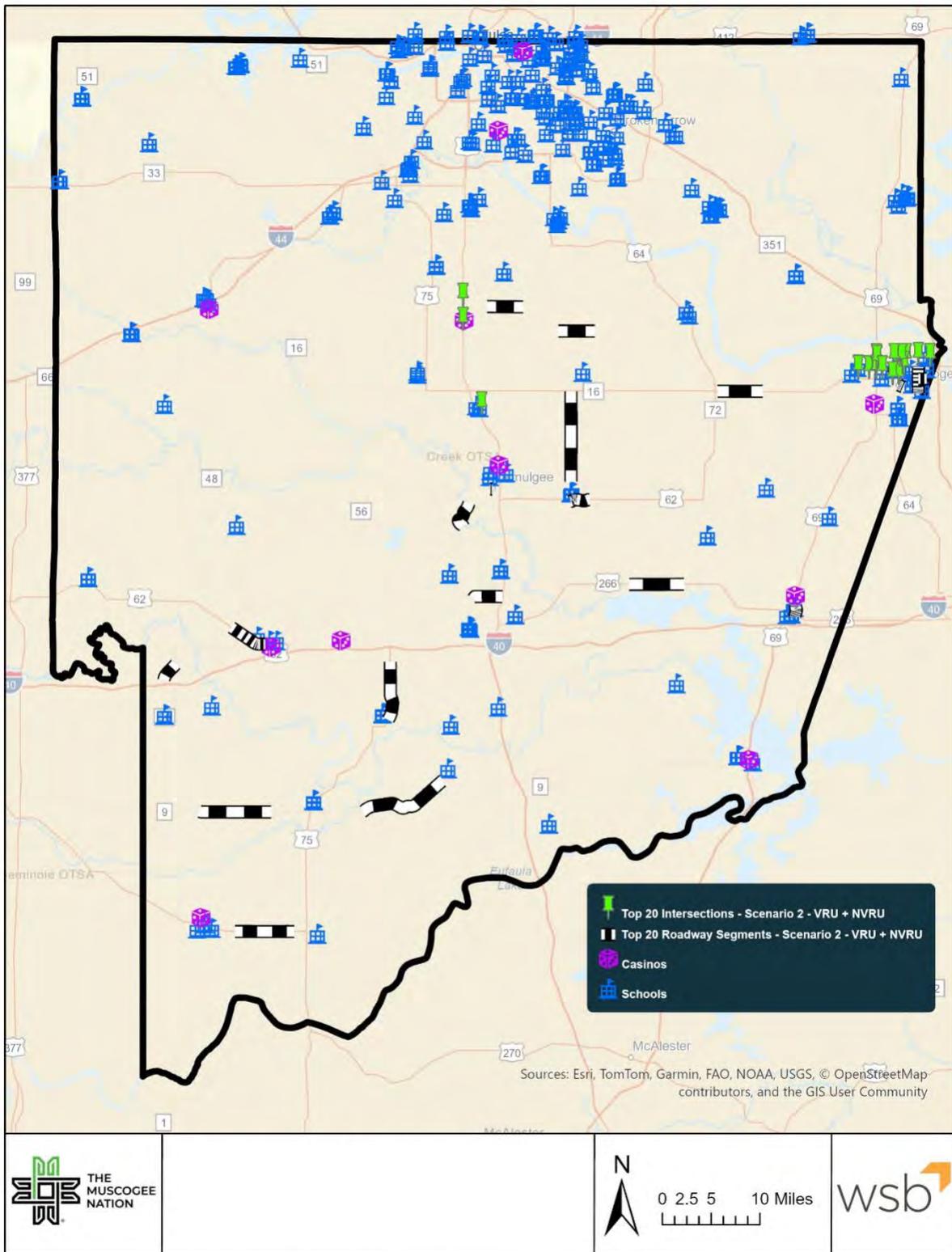


Figure 30: Top 20 Locations – With High Impact Locations

Table 12 - Top 20 Locations (Combined VRU and non-VRU) for Roadway Segments-- Scenario 2

| Location Rank | Source List (VRU/Non-VRU) | Location | Total Number of Crashes (#) | Fatal Crashes (#) | Incapacitating Crashes (#) | Non-Incapacitating Crashes (#) | Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | High Crash Reoccurrence (Years) - Normalized | Pedestrian Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | Bike Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | On HIN | Original Source Rank(s) (from 30-Location List) | |
|---------------|---------------------------|--|-----------------------------|-------------------|----------------------------|--------------------------------|---|--|--|--|--------|--|--|
| | | | | | | | | | | | | From Table 8: Top 8 VRU Roadway Segments - Scenario 2) | From Table 8: Top 8 VRU Roadway Segments - Scenario 2) |
| 1 | Both | N York St from Old Shawnee Rd to E Okmulgee St, Muskogee | 75 | 0 | 3 | 12 | 1.029 | 10 | 1.007 | 1.003 | Yes | 3 | 1 |
| 2 | Both | S Broadway St from W Jefferson Ave to Maple St, Checotah | 8 | 0 | 2 | 0 | 1.073 | 1 | 1.477 | 1.000 | Yes | 1 | 2 |
| 3 | Non-VRU | Highway 62 from East of N 6th St Curves, Morris | 7 | 0 | 2 | 2 | 1.118 | 1 | 1.000 | 1.000 | Yes | - | 3 |
| 4 | Both | US Highway 62 from N 3740 Rd to N 7th St, Okemah | 7 | 2 | 0 | 0 | 1.100 | 1 | 1.667 | 1.000 | Yes | 2 | 6 |
| 5 | Both | EW 133 Rd (270) from N 374 Rd to N 379 Rd | 10 | 1 | 3 | 1 | 1.062 | 1 | 1.069 | 1.000 | Yes | 7 | 4 |
| 6 | Non-VRU | Highway 266 from N 4070 Rd to N 4120 Rd | 9 | 2 | 1 | 1 | 1.268 | 1 | 1.000 | 1.000 | Yes | - | 5 |
| 7 | Non-VRU | Hectorville Rd from N 220 Rd to N 250 Rd | 16 | 0 | 3 | 2 | 1.161 | 1 | 1.000 | 1.000 | Yes | - | 7 |
| 8 | Non-VRU | E 7th St from S Okmulgee Ave to S Grand Ave, Okmulgee | 13 | 0 | 1 | 1 | 2.432 | 1 | 1.000 | 1.000 | Yes | - | 9 |
| 9 | Non-VRU | Sharp Rd from S 200 Rd to S 205 Rd, Okmulgee | 6 | 1 | 1 | 1 | 1.800 | 1 | 1.000 | 1.000 | Yes | - | 10 |
| 10 | Non-VRU | Ferguson Rd from N 310 Rd to Bixby Rd | 6 | 0 | 3 | 0 | 1.300 | 1 | 1.000 | 1.000 | Yes | - | 8 |
| 11 | Non-VRU | State Highway 9 from State Highway 48 to N 377 Rd | 8 | 2 | 0 | 2 | 1.124 | 1 | 1.000 | 1.000 | Yes | - | 11 |
| 12 | Non-VRU | State Highway 9 from E 123 Rd to McComb Ave | 16 | 1 | 0 | 3 | 1.079 | 2.8 | 1.000 | 1.000 | Yes | - | 12 |
| 13 | Non-VRU | State Highway 56 from EW 1120 Rd to N 3690 Rd, Schoolton | 6 | 1 | 1 | 3 | 1.658 | 1 | 1.000 | 1.000 | Yes | - | 13 |
| 14 | Non-VRU | Gibson St from N York St to Civitan Park, Muskogee | 6 | 0 | 1 | 0 | 1.078 | 1 | 1.000 | 1.000 | Yes | - | 16 |
| 15 | Non-VRU | W Highway 16 from Highway 62 to S 134th St W | 7 | 1 | 1 | 0 | 1.077 | 1 | 1.000 | 1.000 | Yes | - | 14 |
| 16 | Both | E Okmulgee St from S Main St to Spaulding Blvd, Muskogee | 7 | 0 | 1 | 0 | 1.001 | 1 | 1.483 | 1.0003 | No | 4 | 19 |
| 17 | Both | N 11th St from W Shawnee St to Tamaroa St, Muskogee | 14 | 0 | 1 | 5 | 1.066 | 1 | 1.472 | 1.000 | Yes | 5 | 17 |
| 18 | Non-VRU | State Highway 52 from Highway 16 to Massingale Rd | 11 | 1 | 1 | 4 | 1.059 | 1 | 1.000 | 1.000 | Yes | - | 15 |
| 19 | Non-VRU | US Highway 75 from 3rd St to Bad Creek | 14 | 0 | 1 | 1 | 1.021 | 1 | 1.000 | 1.000 | Yes | - | 18 |
| 20 | Non-VRU | Conifer Rd from Wilson Rd to Highway 75 | 10 | 1 | 0 | 0 | 1.200 | 1 | 1.000 | 1.000 | Yes | - | 20 |

Table 13 - Top 20 Locations (Combined VRU and non-VRU) for Intersections– Scenario 2

| Location Rank | Source List (VRU/Non-VRU) | Location | Total Number of Crashes (#) | Fatal Crashes (#) | Incapacitating Crashes (#) | Non-Incapacitating Crashes (#) | Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | High Crash Reoccurrence (Years) - Normalized | Pedestrian Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | Bike Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | On HIN | Original Source Rank(s) (from 30-Location List) | |
|---------------|---------------------------|--|-----------------------------|-------------------|----------------------------|--------------------------------|---|--|--|--|--------|--|--|
| | | | | | | | | | | | | From Table 8: Top 8 VRU Roadway Segments – Scenario 2) | From Table 8: Top 8 VRU Roadway Segments – Scenario 2) |
| 1 | Both | N Main St & Court St, Muskogee | 27 | 0 | 1 | 5 | 1.052 | 4.6 | 1 | 2.71 | Yes | - | 1 |
| 2 | Non-VRU | E Shawnee Rd & N Main St, Muskogee | 62 | 0 | 3 | 1 | 1.073 | 10 | 1 | 1 | Yes | - | 2 |
| 3 | Non-VRU | E Shawnee Rd & N York St, Muskogee | 84 | 0 | 2 | 5 | 1.079 | 10 | 1 | 1 | Yes | - | 3 |
| 4 | Non-VRU | E Shawnee Rd & N County Club Rd, Muskogee | 77 | 0 | 3 | 7 | 1.185 | 10 | 1 | 1 | Yes | 1 | 9 |
| 5 | Non-VRU | W Shawnee Rd & N 32nd St, Muskogee | 70 | 0 | 2 | 4 | 1.120 | 10 | 1 | 1 | Yes | - | 4 |
| 6 | Non-VRU | E Shawnee Rd & N 6th St, Muskogee | 59 | 0 | 2 | 4 | 1.111 | 10 | 1 | 1 | Yes | - | 5 |
| 7 | Both | W Okmulgee St & Honor Heights Dr, Muskogee | 49 | 0 | 1 | 9 | 1.243 | 10 | 1.003 | 1 | Yes | - | 6 |
| 8 | Non-VRU | Highway 75 and Ferguson Rd | 26 | 1 | 2 | 3 | 10.000 | 2.8 | 1 | 1 | Yes | 5 | 7 |
| 9 | Non-VRU | W Okmulgee St & N 32nd St, Muskogee | 77 | 0 | 1 | 3 | 1.174 | 10 | 1 | 1 | No | - | 8 |
| 10 | Non-VRU | W Okmulgee St & S Main St, Muskogee | 27 | 0 | 0 | 3 | 1.034 | 4.6 | 1 | 1 | Yes | - | 10 |
| 11 | Non-VRU | N Main St & S Kinsley St, Muskogee | 7 | 0 | 4 | 1 | 1.246 | 1 | 1 | 1 | Yes | 10 | 11 |
| 12 | Both | W Shawnee Rd & Chicago St, Muskogee | 31 | 0 | 1 | 6 | 4.316 | 6.4 | 1 | 1.06 | Yes | - | 12 |
| 13 | Non-VRU | Highway 75 and Will Sampson Rd, Preston | 12 | 0 | 2 | 1 | 2.897 | 2.8 | 1 | 1 | Yes | - | 16 |
| 14 | Non-VRU | N 32nd St & W Broadway St, Muskogee | 29 | 0 | 2 | 1 | 1.067 | 4.6 | 1 | 1 | Yes | - | 13 |
| 15 | Non-VRU | E Shawnee Rd & N 11th St, Muskogee | 48 | 0 | 0 | 5 | 1.276 | 10 | 1 | 1 | Yes | - | 14 |
| 16 | Non-VRU | N 32nd St & Tahlequah St, Muskogee | 43 | 0 | 0 | 4 | 1.303 | 10 | 1 | 1 | Yes | - | 15 |
| 17 | Non-VRU | W Okmulgee St & N 24th St, Muskogee | 34 | 0 | 1 | 5 | 1.120 | 6.4 | 1 | 1 | Yes | - | 17 |
| 18 | Non-VRU | Highway 75 and Hectorville Rd | 15 | 0 | 4 | 2 | 1.167 | 1 | 1 | 1 | Yes | - | 18 |
| 19 | Non-VRU | S 7th St & Elgin St, Muskogee | 16 | 0 | 2 | 3 | 4.083 | 1 | 1 | 1 | Yes | - | 19 |
| 20 | MCN | W Okmulgee St & N 54th St, Muskogee | 18 | 0 | 1 | 3 | 1.697 | 1 | 1 | 1 | Yes | - | 20 |

➤ **Consideration of Public, Stakeholder and MCN Identified Locations**

As part of the hotspot identification process, locations were also gathered through public and stakeholder input via a survey and an interactive comment map. These inputs provided valuable insight into areas of concern identified by the community.

A total of **thirty-seven (37) locations** were identified through **public and stakeholder input**. Among these locations:

- **Two (2) locations had no recorded crash** history and were not considered in the final selection process.
- **Twenty (24) locations had crash** data and were incorporated into the ranking and scoring process, receiving additional weight due to public identification.

Table 14 and **Table 15** below provide a detailed breakdown of locations identified through stakeholder and public input, including crash history, relevant safety metrics, and whether they were selected for the final list for roadway segments and intersections, respectively. For locations not selected, the table includes the reason for their exclusion.

Table 14 – Public and Stakeholder Identified Roadway Segments and Final Selection Status

| Roadway Segments Location | Total Number of Crashes (#) | Fatal Crashes (#) | Incapacitating Crashes (#) | Non-Incapacitating Crashes (#) | Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | High Crash Reoccurrence (Years) - Normalized | Pedestrian Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | Bike Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | Selected for Final List (Yes/No) | Location Rank If Selected | Reason if Not Selected |
|--|-----------------------------|-------------------|----------------------------|--------------------------------|---|--|--|--|----------------------------------|---------------------------|--|
| N York St from Old Shawnee Rd to E Okmulgee St, Muskogee | 73 | 0 | 3 | 10 | 1.029 | 10 | 1.007 | 1.003 | Yes | 1 | - |
| Highway 62 Curves on the east of Morris | 7 | 0 | 2 | 2 | 1.118 | 1 | 1.000 | 1.000 | Yes | 3 | - |
| US Highway 62 from E 1070 Rd to N 7th St, Okemah | 7 | 1 | 1 | 0 | 1.100 | 1 | 1.667 | 1.000 | Yes | 4 | - |
| North Woody Guthrie (Lake Rd), Okemah | 2 | 0 | 0 | 0 | 1.001 | 1 | 1.000 | 1.000 | No | - | Small Number of Crashes |
| Truck Route at E 650 Rd, Inola, Rogers | 17 | 1 | 2 | 2 | 1.427 | 1 | 1.000 | 1.000 | No | - | Relatively small number of crashes, Inside of INCOG, involving the merging of multiple segments. |
| Chandler Rd from N York St to N Antony St | 12 | 0 | 0 | 3 | 1.416 | 1 | 1.000 | 1.000 | No | - | No Fatal/Incapacitating Crashes |
| Hwy 9 from Coon Creek Rd to Buck St, Eufaula | 5 | 0 | 1 | 1 | 1.100 | 1 | 1.000 | 1.000 | No | - | Small Number of Crashes |
| Highway 52 & Bristlecone Rd | 4 | 0 | 0 | 1 | 1.030 | 1 | 1.000 | 1.000 | No | - | Small Number of Crashes |
| E 1080 Rd from N 3710 Rd to 3730 Rd, Castle | 0 | 0 | 0 | 0 | 1.000 | 1 | 1.000 | 1.000 | No | - | No Crashes |
| McKinley Ave around Eufaula Lake, Eufaula | 0 | 0 | 0 | 0 | 1.000 | 1 | 1.000 | 1.000 | No | - | No Crashes |
| Lakeshore Dr around Eufaula Lake, Eufaula | 0 | 0 | 0 | 0 | 1.000 | 1 | 1.000 | 1.000 | No | - | No Crashes |
| Hwy 48 from N3720 Rd to N3730 Rd, Bearden* | 2 | 0 | 0 | 0 | 1.004 | 1 | 1.000 | 1.000 | Yes | 21 | - |
| New Lake Rd around Lake Henryetta* | 1 | 0 | 0 | 0 | 1.021 | 1 | 1.000 | 1.000 | Yes | 22 | - |
| Lake Rd from New Lake Rd to Main St, Henryetta* | 0 | 0 | 0 | 0 | 1.000 | 1 | 1.000 | 1.000 | Yes | 23 | - |

* These locations were not selected based on the rating and scoring process but were included in the final list as part of the safety concern locations provided through public input (PI)

Table 15 – Public and Stakeholder Identified Intersection and Final Selection Status

| Intersection Location | Total Number of Crashes (#) | Fatal Crashes (#) | Incapacitating Crashes (#) | Non-Incapacitating Crashes (#) | Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | High Crash Reoccurrence (Years) - Normalized | Pedestrian Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | Bike Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | Selected for Final List (Yes/No) | Location Rank If Selected | Reason if Not Selected |
|---|-----------------------------|-------------------|----------------------------|--------------------------------|---|--|--|--|----------------------------------|---------------------------|---|
| E Shawnee Rd & N Main St, Muskogee | 62 | 0 | 3 | 1 | 1.073 | 10 | 1.000 | 1.000 | Yes | 1 | - |
| E Shawnee Rd & N 6th St, Muskogee | 59 | 0 | 2 | 4 | 1.111 | 10 | 1.000 | 1.000 | Yes | 2 | - |
| Highway 75 & Ferguson Rd | 26 | 1 | 2 | 3 | 6.947 | 2.8 | 1.000 | 1.000 | Yes | 3 | - |
| N Main St & Court St, Muskogee | 27 | 0 | 1 | 3 | 1.052 | 4.6 | 1.000 | 2.710 | Yes | 4 | - |
| W Shawnee Rd & Chicago St, Muskogee | 31 | 0 | 1 | 6 | 4.316 | 6.4 | 1.000 | 1.060 | Yes | 8 | - |
| E Shawnee Rd & N 11th St, Muskogee | 48 | 0 | 0 | 5 | 1.276 | 10 | 1.000 | 1.000 | Yes | 9 | - |
| Highway 75 & Hectorville Rd | 15 | 0 | 4 | 2 | 1.111 | 1 | 1.000 | 1.000 | Yes | 10 | - |
| W Okmulgee St & Main St, Muskogee | 27 | 0 | 0 | 3 | 1.034 | 4.6 | 1.000 | 1.000 | Yes | 13 | - |
| Highway 75 & Will Sampson Rd, Preston | 12 | 0 | 2 | 1 | 2.897 | 2.8 | 1.000 | 1.000 | Yes | 15 | - |
| W Okmulgee St & N 54th St, Muskogee | 18 | 0 | 1 | 3 | 1.697 | 1 | 1.000 | 1.000 | Yes | 20 | - |
| E 71st St & S Sheridan Rd, Tulsa | 46 | 0 | 3 | 9 | 1.05 | 8.2 | 1.000 | 1.000 | No | - | Selected in scenario 1, but since the location falls within INCOG boundaries, it did not appear in scenario 2 or the final selection. |
| E Peak Blvd & Queens Rd, Muskogee | 8 | 1 | 0 | 1 | 1.823 | 1 | 1.000 | 1.000 | No | - | Small Number of Crashes |
| E Peak Blvd & S Cherokee St, Muskogee | 18 | 0 | 0 | 2 | 1.014 | 1 | 1.000 | 1.000 | No | - | No Fatal/Incapacitating Crashes + Not in HIN |
| S Woody Guthrie St & Date St, Okemah | 1 | 0 | 1 | 0 | 1.605 | 1 | 1.000 | 1.000 | No | - | Small Number of Crashes |
| Highway 52 & Bristlecone Rd | 0 | 0 | 0 | 0 | 1.000 | 1 | 1.000 | 1.000 | No | - | No Crashes |
| Highway 9 & S 4110 Rd | 4 | 0 | 1 | 1 | 1.014 | 1 | 1.000 | 1.000 | No | - | Small Number of Crashes |
| Highway 56 & Highway 48 | 10 | 0 | 1 | 0 | 1.274 | 1 | 1.000 | 1.000 | No | - | Small Number of Crashes |
| E 201st St S, Liberty Elementary School | 1 | 0 | 0 | 0 | 1.008 | 1 | 1.000 | 1.000 | No | - | Small Number of Crashes |
| Highway 75 & Gun Club Rd* | 10 | 0 | 0 | 1 | 1.006 | 2.8 | 1.000 | 1.000 | Yes | 21 | - |
| E 1100 Rd RR Crossing, Onapa* | 0 | 0 | 0 | 0 | 1.000 | 1 | 1.000 | 1.000 | Yes | 22 | - |
| Lake Rd & W Main St, Henryetta* | 1 | 0 | 0 | 0 | 1.0001 | 1 | 1.000 | 1.000 | Yes | 23 | - |
| S 2nd St & W Main St, Henryetta* | 1 | 0 | 0 | 0 | 1.0004 | 1 | 1.000 | 1.000 | Yes | 24 | - |
| Old Hwy 62 & Hwy 56* | 7 | 1 | 0 | 1 | 2.142 | 1 | 1.000 | 1.000 | Yes | 25 | - |
| Hwy 66 & Slick Rd* | 0 | 0 | 0 | 0 | 1.000 | 1 | 1.000 | 1.000 | Yes | 26 | - |
| E 151st St S & Warrior Rd, Glenpool* | 1 | 0 | 0 | 0 | 1.0004 | 1 | 1.000 | 1.000 | Yes | 27 | - |
| E 151st St S & S Peoria Ave, Glenpool* | 17 | 1 | 3 | 2 | 1.209 | 2.8 | 1.000 | 1.000 | Yes | 28 | - |
| E 151st St S & S Lewis Ave, Glenpool* | 2 | 0 | 0 | 0 | 1.0005 | 1 | 1.000 | 1.000 | Yes | 29 | - |

* These locations were not selected based on the rating and scoring process but were included in the final list as part of the safety concern locations provided through public input (PI)

➤ Proposed Hotspot Locations

The selection process for hotspot locations began with identifying the top twenty (20) hotspot roadway segments and twenty (20) hotspot intersections based on prioritization criteria, incorporating both vulnerable road user (VRU) and non-VRU locations. This selection was conducted under Scenario 2, which emphasizes areas outside the INCOG boundary and excludes Interstates, Freeways, and Major Arterials from the analysis. To ensure comprehensive coverage of safety concerns, additional locations identified through the public engagement process—based on roadway geometry and safety issues—were added to this list. Together, these form the proposed list of hotspot locations.

Table 16 and **Table 17** present Hotspot Locations for roadway segments and intersections respectively. **Figure 31** to **Figure 35** visualize the selected locations in relation to INCOG boundaries and roadway classifications, High Injury Network (HIN) and disadvantaged communities.

Table 16 – Proposed 23 Hotspot Locations for Roadway Segments

| Location Rank | Source List (VRU/Non-VRU) | Location | Total Number of Crashes (#) | Fatal Crashes (#) | Incapacitating Crashes (#) | Non-Incapacitating Crashes (#) | Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | High Crash Reoccurrence (Years) - Normalized | Pedestrian Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | Bike Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | On HIN | Original Source Rank(s) (from 30-Location List) | |
|---------------|---------------------------|--|-----------------------------|-------------------|----------------------------|--------------------------------|---|--|--|--|--------|--|--|
| | | | | | | | | | | | | From Table 8: Top 8 VRU Roadway Segments – Scenario 2) | From Table 8: Top 8 VRU Roadway Segments – Scenario 2) |
| 1 | Both | N York St from Old Shawnee Rd to E Okmulgee St, Muskogee | 75 | 0 | 3 | 12 | 1.029 | 10 | 1.007 | 1.003 | Yes | 3 | 1 |
| 2 | Both | S Broadway St from W Jefferson Ave to Maple St, Checotah | 8 | 0 | 2 | 0 | 1.073 | 1 | 1.477 | 1.000 | Yes | 1 | 2 |
| 3 | Non-VRU | Highway 62 from East of N 6th St Curves, Morris | 7 | 0 | 2 | 2 | 1.118 | 1 | 1.000 | 1.000 | Yes | - | 3 |
| 4 | Both | US Highway 62 from N 3740 Rd to N 7th St, Okemah | 7 | 2 | 0 | 0 | 1.100 | 1 | 1.667 | 1.000 | Yes | 2 | 6 |
| 5 | Both | EW 133 Rd (270) from N 374 Rd to N 379 Rd | 10 | 1 | 3 | 1 | 1.062 | 1 | 1.069 | 1.000 | Yes | 7 | 4 |
| 6 | Non-VRU | Highway 266 from N 4070 Rd to N 4120 Rd | 9 | 2 | 1 | 1 | 1.268 | 1 | 1.000 | 1.000 | Yes | - | 5 |
| 7 | Non-VRU | Hectorville Rd from N 220 Rd to N 250 Rd | 16 | 0 | 3 | 2 | 1.161 | 1 | 1.000 | 1.000 | Yes | - | 7 |
| 8 | Non-VRU | E 7th St from S Okmulgee Ave to S Grand Ave, Okmulgee | 13 | 0 | 1 | 1 | 2.432 | 1 | 1.000 | 1.000 | Yes | - | 9 |
| 9 | Non-VRU | Sharp Rd from S 200 Rd to S 205 Rd, Okmulgee | 6 | 1 | 1 | 1 | 1.800 | 1 | 1.000 | 1.000 | Yes | - | 10 |
| 10 | Non-VRU | Ferguson Rd from N 310 Rd to Bixby Rd | 6 | 0 | 3 | 0 | 1.300 | 1 | 1.000 | 1.000 | Yes | - | 8 |
| 11 | Non-VRU | State Highway 9 from State Highway 48 to N 377 Rd | 8 | 2 | 0 | 2 | 1.124 | 1 | 1.000 | 1.000 | Yes | - | 11 |
| 12 | Non-VRU | State Highway 9 from E 123 Rd to McComb Ave | 16 | 1 | 0 | 3 | 1.079 | 2.8 | 1.000 | 1.000 | Yes | - | 12 |
| 13 | Non-VRU | State Highway 56 from EW 1120 Rd to N 3690 Rd, Schoolton | 6 | 1 | 1 | 3 | 1.658 | 1 | 1.000 | 1.000 | Yes | - | 13 |
| 14 | Non-VRU | Gibson St from N York St to Civitan Park, Muskogee | 6 | 0 | 1 | 0 | 1.078 | 1 | 1.000 | 1.000 | Yes | - | 16 |
| 15 | Non-VRU | W Highway 16 from Highway 62 to S 134th St W | 7 | 1 | 1 | 0 | 1.077 | 1 | 1.000 | 1.000 | Yes | - | 14 |
| 16 | Both | E Okmulgee St from S Main St to Spaulding Blvd, Muskogee | 7 | 0 | 1 | 0 | 1.001 | 1 | 1.483 | 1.0003 | No | 4 | 19 |
| 17 | Both | N 11th St from W Shawnee St to Tamaroa St, Muskogee | 14 | 0 | 1 | 5 | 1.066 | 1 | 1.472 | 1.000 | Yes | 5 | 17 |
| 18 | Non-VRU | State Highway 52 from Highway 16 to Massingale Rd | 11 | 1 | 1 | 4 | 1.059 | 1 | 1.000 | 1.000 | Yes | - | 15 |
| 19 | Non-VRU | US Highway 75 from 3rd St to Bad Creek | 14 | 0 | 1 | 1 | 1.021 | 1 | 1.000 | 1.000 | Yes | - | 18 |
| 20 | Non-VRU | Conifer Rd from Wilson Rd to Highway 75 | 10 | 1 | 0 | 0 | 1.200 | 1 | 1.000 | 1.000 | Yes | - | 20 |
| 21 | PI* | Hwy 48 from N3720 Rd to N3730 Rd, Bearden | 2 | 0 | 0 | 0 | 1.004 | 1 | 1.000 | 1.000 | No | - | - |
| 22 | PI* | New Lake Rd around Lake Henryetta | 1 | 0 | 0 | 0 | 1.021 | 1 | 1.000 | 1.000 | No | - | - |
| 23 | PI* | Lake Rd from New Lake Rd to Main St, Henryetta | 0 | 0 | 0 | 0 | 1.000 | 1 | 1.000 | 1.000 | No | - | - |

* These 3 locations were not selected based on the rating and scoring process but were included in the final list as part of the safety concern locations provided through public input (PI)

Table 17 - Proposed 29 Hotspot Locations for Intersections

| Location Rank | Source List (VRU/Non-VRU) | Location | Total Number of Crashes (#) | Fatal Crashes (#) | Incapacitating Crashes (#) | Non-Incapacitating Crashes (#) | Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | High Crash Reoccurrence (Years) - Normalized | Pedestrian Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | Bike Crash Rate (Crashes per 100 million vehicle-miles) - Normalized | On HIN | Original Source Rank(s) (from 30-Location List) | |
|---------------|---------------------------|--|-----------------------------|-------------------|----------------------------|--------------------------------|---|--|--|--|--------|--|--|
| | | | | | | | | | | | | From Table 8: Top 8 VRU Roadway Segments - Scenario 2) | From Table 8: Top 8 VRU Roadway Segments - Scenario 2) |
| 1 | Non-VRU | E Shawnee Rd & N Main St, Muskogee | 62 | 0 | 3 | 1 | 1.073 | 10 | 1 | 1 | Yes | - | 1 |
| 2 | Non-VRU | E Shawnee Rd & N 6th St, Muskogee | 59 | 0 | 2 | 4 | 1.111 | 10 | 1 | 1 | Yes | - | 2 |
| 3 | Non-VRU | Highway 75 and Ferguson Rd | 26 | 1 | 2 | 3 | 10.000 | 2.8 | 1 | 1 | Yes | - | 3 |
| 4 | Both | N Main St & Court St, Muskogee | 27 | 0 | 1 | 5 | 1.052 | 4.6 | 1 | 2.71 | Yes | 1 | 9 |
| 5 | Non-VRU | E Shawnee Rd & N York St, Muskogee | 84 | 0 | 2 | 5 | 1.079 | 10 | 1 | 1 | Yes | - | 4 |
| 6 | Non-VRU | E Shawnee Rd & N County Club Rd, Muskogee | 77 | 0 | 3 | 7 | 1.185 | 10 | 1 | 1 | Yes | - | 5 |
| 7 | Both | W Shawnee Rd & N 32nd St, Muskogee | 70 | 0 | 2 | 4 | 1.120 | 10 | 1 | 1 | Yes | - | 6 |
| 8 | Both | W Shawnee Rd & Chicago St, Muskogee | 31 | 0 | 1 | 6 | 4.316 | 6.4 | 1 | 1.06 | Yes | 5 | 7 |
| 9 | Non-VRU | E Shawnee Rd & N 11th St, Muskogee | 48 | 0 | 0 | 5 | 1.276 | 10 | 1 | 1 | Yes | - | 8 |
| 10 | Non-VRU | Highway 75 and Hectorville Rd | 15 | 0 | 4 | 2 | 1.167 | 1 | 1 | 1 | Yes | - | 10 |
| 11 | Both | W Okmulgee St & Honor Heights Dr, Muskogee | 49 | 0 | 1 | 9 | 1.243 | 10 | 1.003 | 1 | Yes | 10 | 11 |
| 12 | Non-VRU | W Okmulgee St & N 32nd St, Muskogee | 77 | 0 | 1 | 3 | 1.174 | 10 | 1 | 1 | Yes | - | 12 |
| 13 | Non-VRU | W Okmulgee St & S Main St, Muskogee | 27 | 0 | 0 | 3 | 1.034 | 4.6 | 1 | 1 | Yes | - | 16 |
| 14 | Non-VRU | N Main St & S Kinsley St, Muskogee | 7 | 0 | 4 | 1 | 1.246 | 1 | 1 | 1 | Yes | - | 13 |
| 15 | Non-VRU | Highway 75 and Will Sampson Rd, Preston | 12 | 0 | 2 | 1 | 2.897 | 2.8 | 1 | 1 | Yes | - | 14 |
| 16 | Non-VRU | N 32nd St & W Broadway St, Muskogee | 29 | 0 | 2 | 1 | 1.067 | 4.6 | 1 | 1 | Yes | - | 15 |
| 17 | Non-VRU | N 32nd St & Tahlequah St, Muskogee | 43 | 0 | 0 | 4 | 1.303 | 10 | 1 | 1 | No | - | 17 |
| 18 | Non-VRU | W Okmulgee St & N 24th St, Muskogee | 34 | 0 | 1 | 5 | 1.120 | 6.4 | 1 | 1 | Yes | - | 18 |
| 19 | Non-VRU | S 7th St & Elgin St, Muskogee | 16 | 0 | 2 | 3 | 4.083 | 1 | 1 | 1 | Yes | - | 19 |
| 20 | Non-VRU | W Okmulgee St & N 54th St, Muskogee | 18 | 0 | 1 | 3 | 1.697 | 1 | 1 | 1 | Yes | - | 20 |
| 21 | PI* | Highway 75 & Gun Club Rd | 10 | 0 | 0 | 1 | 1.006 | 2.8 | 1 | 1 | No | - | - |
| 22 | PI* | E 1100 Rd RR Crossing, Onapa | 0 | 0 | 0 | 0 | 1.000 | 1 | 1 | 1 | No | - | - |
| 23 | PI* | Lake Rd & W Main St, Henryetta | 1 | 0 | 0 | 0 | 1.0001 | 1 | 1 | 1 | No | - | - |
| 24 | PI* | S 2nd St & W Main St, Henryetta | 1 | 0 | 0 | 0 | 1.0004 | 1 | 1 | 1 | No | - | - |
| 25 | PI* | Old Hwy 62 & Hwy 56 | 7 | 1 | 0 | 1 | 2.142 | 1 | 1 | 1 | No | - | - |
| 26 | PI* | Hwy 66 & Slick Rd | 0 | 0 | 0 | 0 | 1.000 | 1 | 1 | 1 | No | - | - |
| 27 | PI* | E 151st St S & Warrior Rd, Glenpool | 1 | 0 | 0 | 0 | 1.0004 | 1 | 1 | 1 | No | - | - |
| 28 | PI* | E 151st St S & S Peoria Ave, Glenpool | 17 | 1 | 3 | 2 | 1.209 | 2.8 | 1 | 1 | Yes | - | - |
| 29 | PI* | E 151st St S & S Lewis Ave, Glenpool | 2 | 0 | 0 | 0 | 1.0005 | 1 | 1 | 1 | No | - | - |

* These 9 locations were not selected based on the rating and scoring process but were included in the final list as part of the safety concern locations provided through public input (PI)

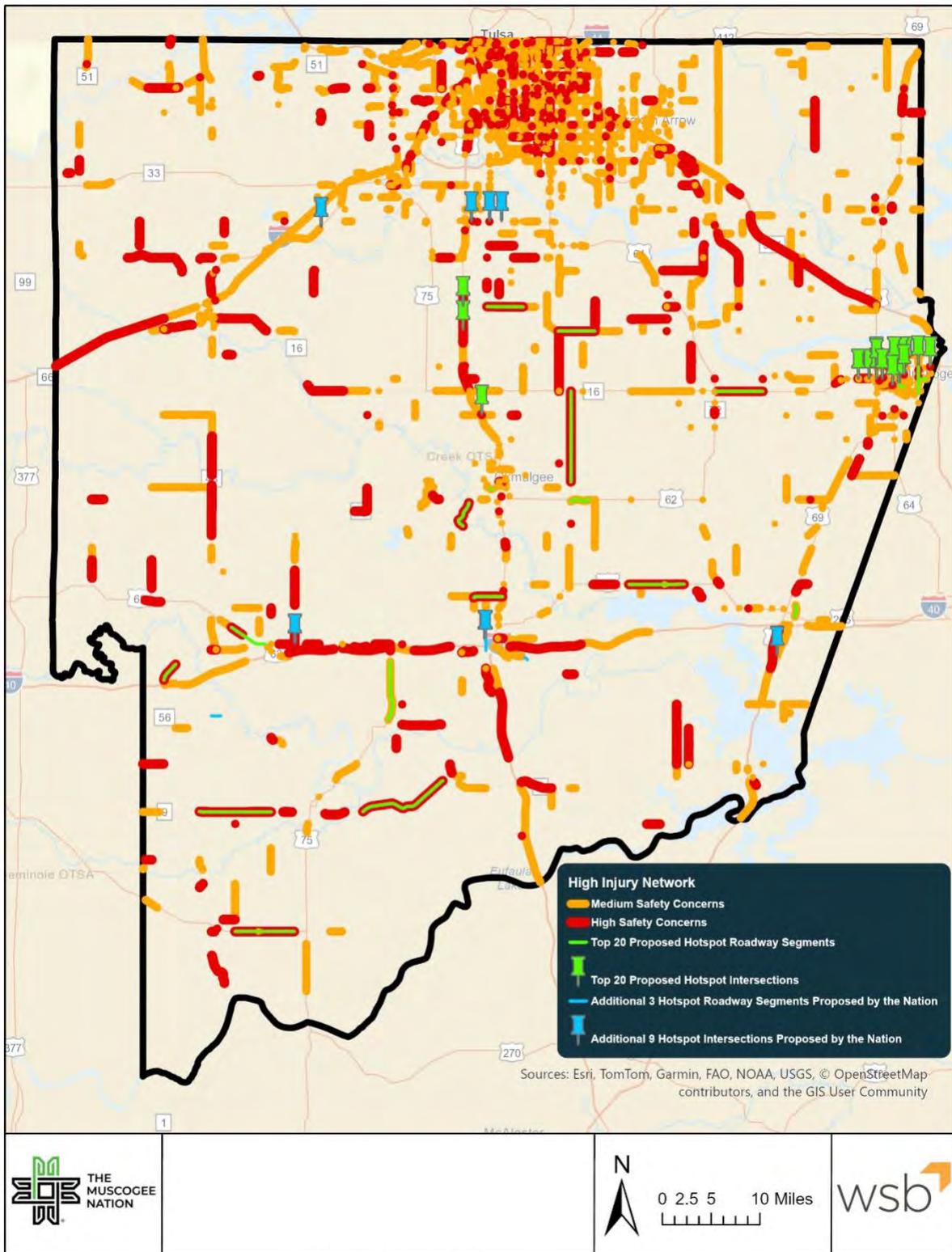


Figure 32: Proposed Hotspot Locations – With High Injury Network

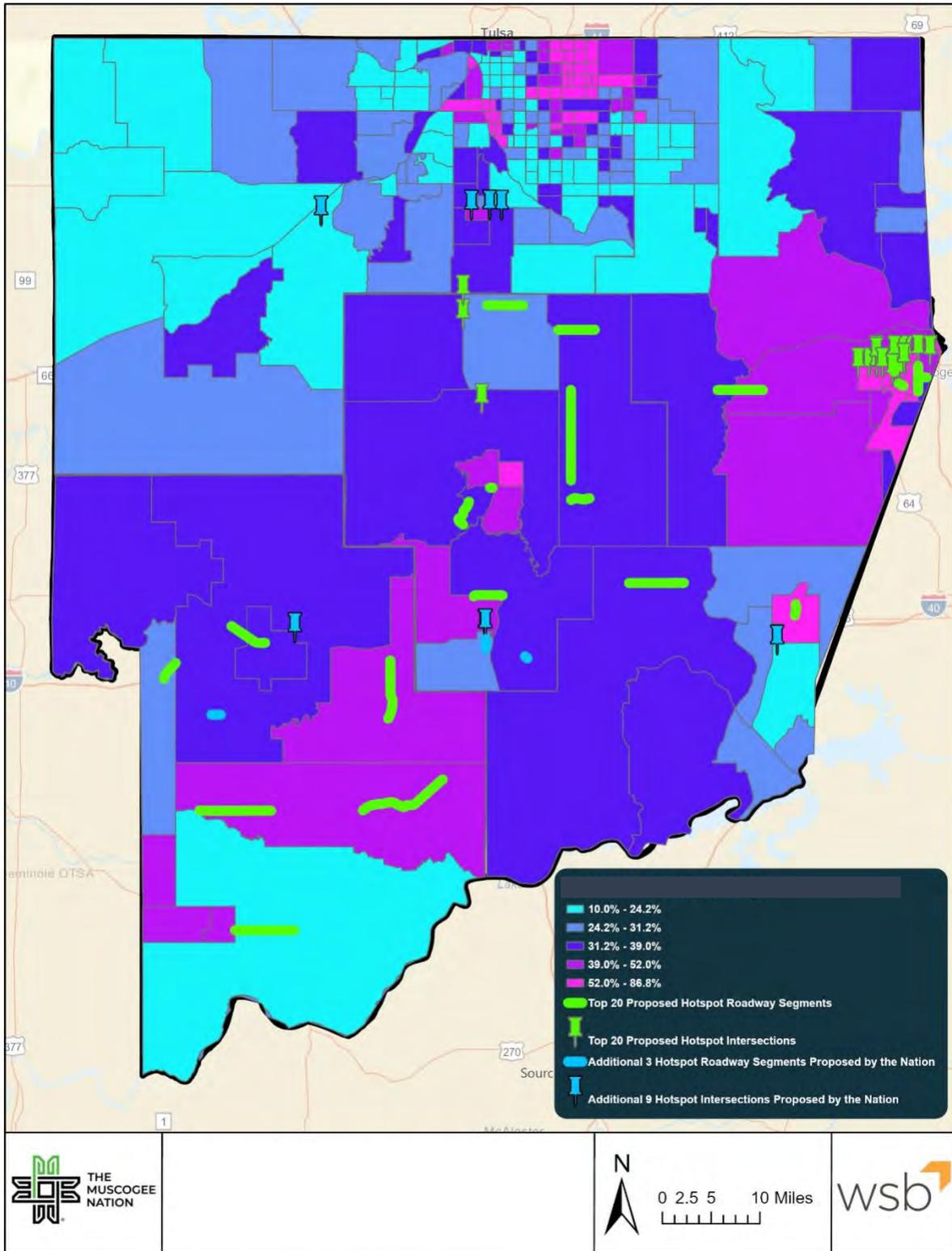


Figure 33: Proposed Hotspot Locations – With Non-Dominant Population

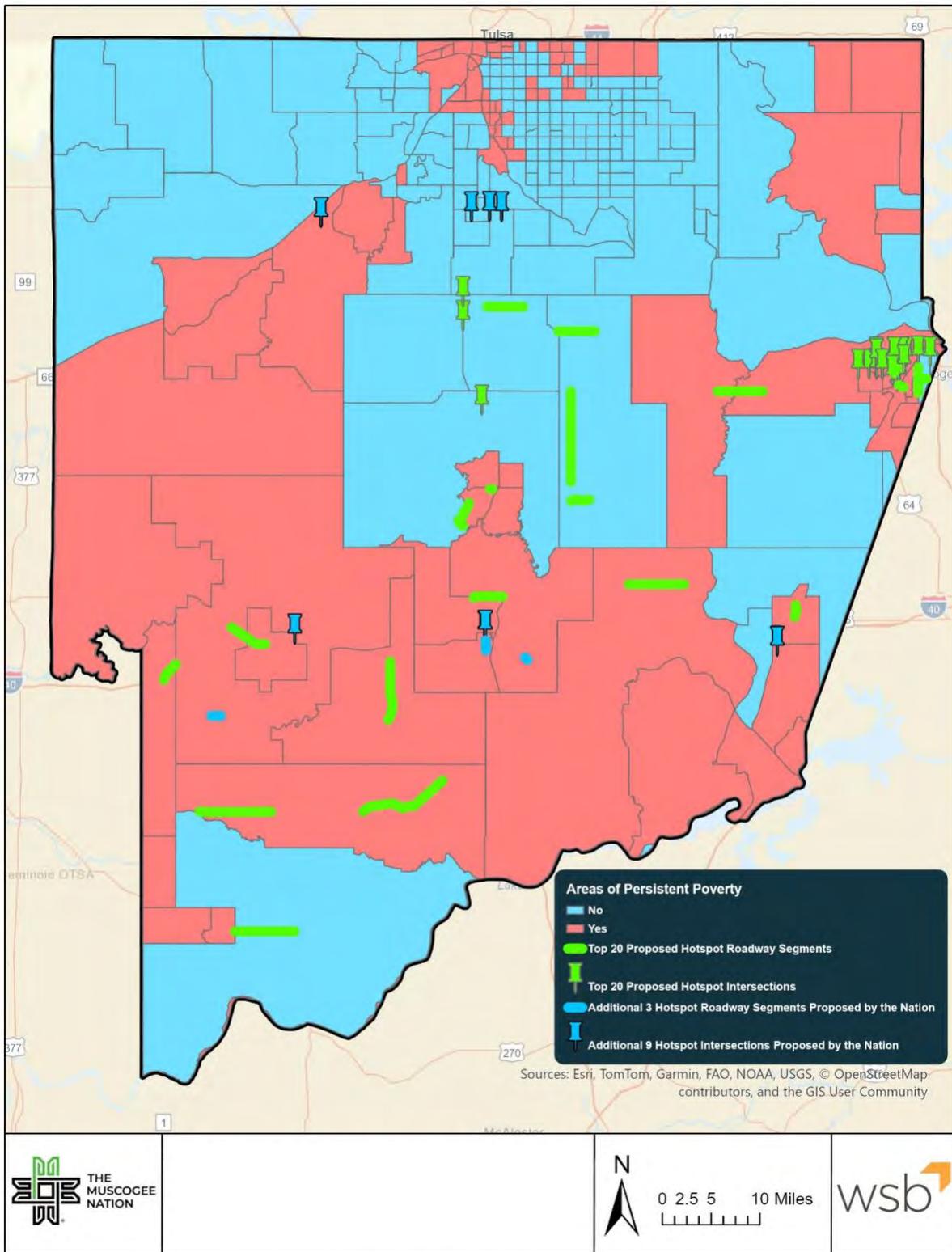


Figure 34: Proposed Hotspot Locations – With APP

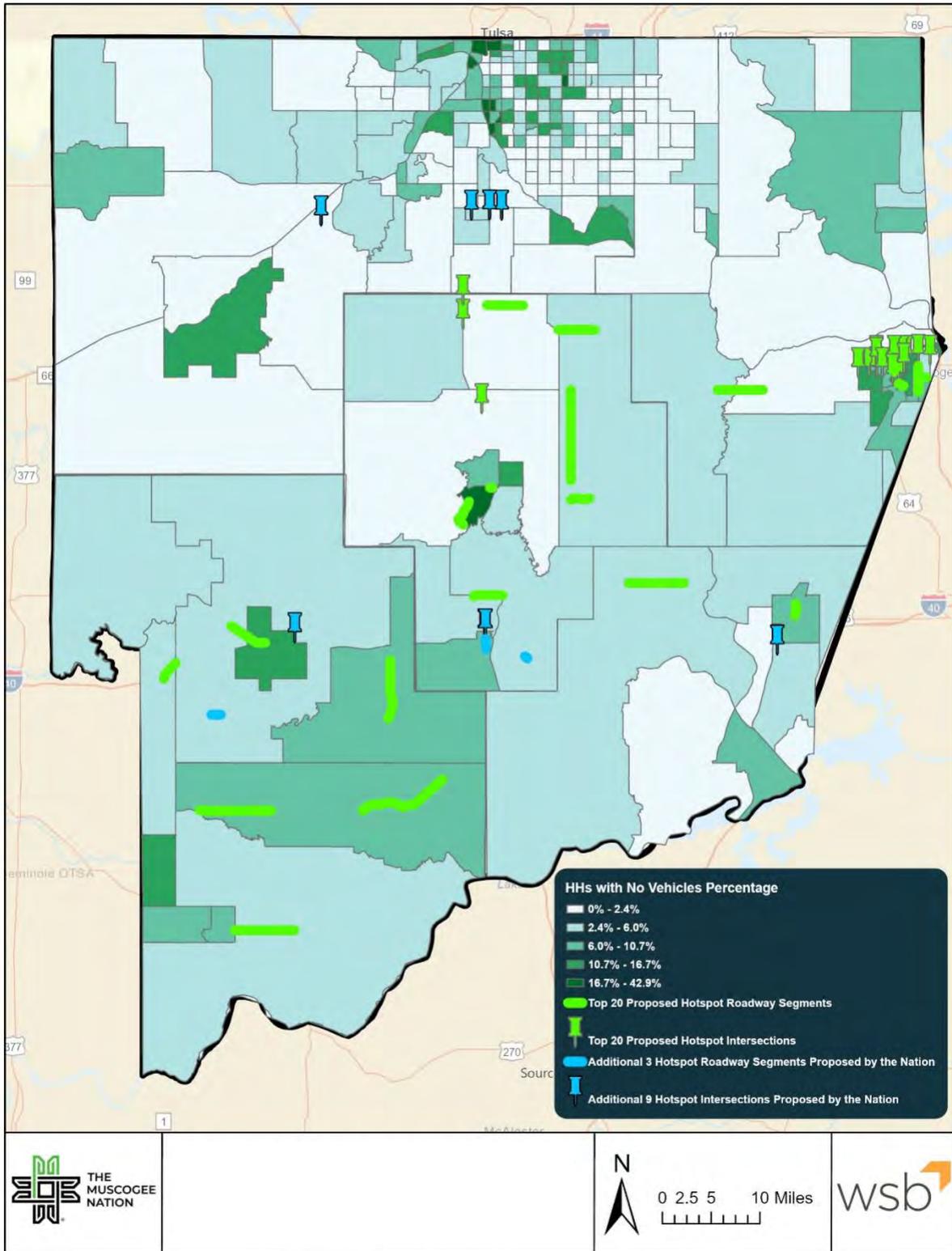


Figure 35: Proposed Hotspot Locations – With Vehicle Ownership

APPENDIX H

SAFETY ISSUES – HOTSPOT LOCATIONS, RECOMMENDED COUNTERMEASURES AND CMF

Appendix H

Safety Issues – Hotspot Locations, Recommended Countermeasures and CMF

H.1

Safety Issues-Countermeasures and CMF

Safer Roads

| Safety Category | Safety Concern/Issue | Strategies & Countermeasures | CMF (Crash Modification Factor) | Implementation Term |
|----------------------------|--|---|--|--------------------------|
| Intersections | No or limited overhead signs, no signal heads, move heads closer to stop bar, left turn signs confusing/missing, no left side heads, no right lane must turn right signs, need flashing beacons, no or limited speed limit signs, intersection ahead signs, crossroad signs, pedestrian crossing, no right arrow lens. | Install, improve traffic control devices/signal heads | 0.56 (Install signal head) | Short-Term / Medium-Term |
| | | | 0.78 (Installing stop signs at an unsignalized intersection) | |
| | | Dedicated turn lanes at intersections | 0.73 (Install left turn lane) | Medium-Term |
| | | | 0.834 (Install right turn lane) | |
| | Visibility obstructed from signal heads and crosswalks | Remove all line-of-sight obstructions | 0.62 (Remove fixed object) | Short-Term |
| | Need to evaluate signal timing | Improve signal timing | 0.678 (Install adaptive traffic signal control) | Short-Term / Medium-Term |
| | Travel lanes not properly aligned | Re-align travel lanes | - | Medium-Term |
| | Crosswalk may interfere with traffic line of sight | Re-alignment of crosswalk | - | Medium-Term |
| | No paved shoulders | Improve paved shoulder width | $CMF = e^{-0.070(SW_{new} - SW_{existing})}$ <p>Where: SW_{new} = new (or proposed) average paved shoulder width in feet $SW_{existing}$ = existing average paved shoulder width in feet</p> | Medium-Term / Long-Term |
| | Lane drop pavement markings needed | Installation of proper road markings/stripping | 0.865 (Implement systemic signing and making improvements) | Short-Term |
| No intersection luminaires | Better lighting around intersections | 0.792 (Install intersection lighting) | Medium-Term | |
| | Install red-light cameras | 0.7 | Medium-Term | |

| Safer Roads (cont.) | | | | |
|-------------------------------------|---|---|---|--------------------------|
| Safety Category | Safety Concern/Issue | Strategies & Countermeasures | CMF (Crash Modification Factor) | Implementation Term |
| Roadway Departure | Existing paved shoulders need rumble strips | Safety edges – or minimal edges no drop offs | 0.59 - 0.868 (Install safety edge treatment) | Medium-Term |
| | | Install cable barriers and median barriers | 0.16 (Install cable median barriers) | Long-Term |
| | | Install rumble strips in rural areas | 0.76 - 1.18 (Install rumble strips) | Short-Term |
| | Pavement markings need refurbishing | Install proper road markings/striping | 0.78 - 0.85 (Install edge line pavement marking on rural roads) | Short-Term |
| | | | 0.153 - 0.509 (Modify/Install wrong way sign) | |
| | No or narrow paved shoulders | Improve paved shoulder width | 0.57 (Add new paved shoulder) modify shoulder on rural road | Medium-Term / Long-Term |
| | No delineators, no Type 3 delineators | Install delineator posts | 0.85 - 1.04 (Install post mounted delineator) | Short-Term / Medium-Term |
| | | | 0.55 (Install edge lines, centerlines, post mounted delineator) | |
| | Steep ditches | Reduce ditch angles | - | Long-Term |
| | Sidewalk close to road | Re-align roadway or sidewalk | - | Long-Term |
| Dirt roads, or poor road conditions | Resurface roads and improve bridges | 0.74 - 1.03 (Change street surface condition from poor to good) | Long-Term | |

| Safer Roads (cont.) | | | | |
|------------------------|--|--|--|--------------------------|
| Safety Category | Safety Concern/Issue | Strategies & Countermeasures | CMF (Crash Modification Factor) | Implementation Term |
| Poor signage | No or needed road signs (curve, no passing, crossroad, speed advisory, speed limit, icy bridge, mail truck stopping, stop ahead, mixture of ununiform regulator & warning, chevron, school bus warning, end divided highway) | Inventory all signs (curve, icy bridge, stop ahead, signal ahead, no passing, etc.) and install | 0.85 - 0.93 (Install sign to conform to MUTCD) | Short-Term / Medium-Term |
| Poor line of sight | Visibility issues with seeing signal heads and crosswalks | Re-align roadway, clear all visual obstructions | 0.62 (Remove fixed object) | Short-Term / Medium-Term |
| | | | 0.93 (Improve visibility of signal head) | |
| | | | 0.6 (Install high visibility crosswalk) | |
| Pedestrian/bike safety | Pedestrian/bike facility | Improving pedestrian crossings are recommendations based on data analysis | - | Short-Term / Medium-Term |
| | | Provide safe infrastructure for walking, e.g. adequate walking paths, lighting, eliminate pedestrian hazards | 0.52 (Install pedestrian fencing) | Medium-Term |
| | | | 0.82 (Pedestrian crosswalk at midblock) | |
| | | Improve facilities and infrastructure risks to non-motorized users | 0.86 (Median treatment) | Medium-Term |
| | 0.6 (Install high-visibility crosswalk) | | | |
| | School bus stop not delineated | Better school bus stop delineation | 0.63 (High visibility yellow, continental crosswalk type at schools) | Short-Term |
| | | | 0.18 (Presence of bus stop) | |
| | Add dedicated bicycle lanes | 0.552 (Install separated bike lanes) | Medium-Term / Long-Term | |

Safer People

| Safer People | | | | |
|-------------------------------------|--|---|---------------------------------|--------------------------|
| Safety Category | Safety Concern/Issue | Strategies & Countermeasures | CMF (Crash Modification Factor) | Implementation Term |
| Pedestrian/Bike Safety | Community engagement & education, student drop-off programs | Conduct community education & establish school drop-off procedures | - | Short-Term |
| | Limited rural transit service | Collaboration with Ki Bois Area Transit (KATS) to expand coverage | - | Medium-Term |
| | Transit reliability for daily commuters | Optimize and update public transit schedules for safety and reliability | - | Medium-Term |
| | Lack of public transit access | Expand transit services | - | Long-Term |
| | Lack of transit prioritization | Implement transit signal and lane priority | 0.806 – 0.836 | Medium-Term / Long-Term |
| | Unsafe walking and cycling habits | Launch road user education programs for walking and cycling safety | - | Short-Term |
| | Unsafe crossing behaviors and low driver awareness | Launch public education campaigns | - | Short-Term |
| | Child pedestrian safety near schools | Implement Safe Routes to School programs | 0.87 | Medium-Term |
| High-Risk Driving Behaviors | Aggressive / inattentive driving | Run public education campaigns for safe driving | - | Short-Term |
| | High-risk maneuvers (failed to yield, following too closely, unsafe turns) | Enhance driver education programs in schools | - | Medium-Term |
| Distracted Driving, Speeding | Lack of awareness about emergency safety behavior | Launch public awareness campaigns during emergencies | - | Short-Term |
| | Texting while driving | Organize public pop-up events and campaigns on distracted driving dangers | - | Short-Term |
| Drug-Impaired Driving | Insufficient law enforcement training | Train law enforcement on impaired driving detection | - | Short-Term / Medium-Term |
| | Impaired driving (alcohol, drugs) | High-Visibility Enforcement: Sobriety checkpoints & saturation patrols | - | Short-Term |
| Occupant Safety | Seatbelt and child seat non-compliance | Promote High Visibility Enforcement (HVE) campaigns for occupant protection | - | Short-Term |

Safer Speeds

| Safer Speeds | | | | |
|------------------------------------|---|---|--|----------------------------|
| Safety Category | Safety Concern/Issue | Strategies & Countermeasures | CMF (Crash Modification Factor) | Implementation Term |
| High Risk Driving Behaviors | Lack of coordinated enforcement on violations | Collaboration with multiple agencies to enhance enforcement efforts | - | Medium-Term |
| | Speeding, failed to yield, alcohol/drug, crash clusters | Increased and coordinated Law Enforcement HVE in HIN and hot spots | - | Short-Term |
| Speeding | Speed violations in targeted areas | Install speed safety cameras | 0.865 (Install fixed speed camera) | Medium-Term |
| | Recurring speeding in neighborhood or corridor | Deploy speed trailers | - | Short-Term |
| | Excessive speed and aggressive driving | Implement speed limit enforcement & traffic calming measures | - | Medium-Term / Long-Term |
| Speed Limit Signage | Missing or limited speed limit signs | Conduct speed limit sign inventory and install missing signs | 0.92 (Install variable speed limit sign) | Short-Term |
| Speed Advisory Signage | Missing advisory signs at curves | Install advisory speed signs at curves | 0.92 (Install variable speed limit sign) | Short-Term |
| Speed Monitoring | Lack of real-time speed feedback | Install speed monitoring devices (intersection safety devices) | 0.66 - 0.936 (Install safety device) | Short-Term / Medium-Term |

Post Crash Care

| Post Crash Care | | | | |
|--|--|---|---------------------------------|-------------------------|
| Safety Category | Safety Concern/Issue | Strategies & Countermeasures | CMF (Crash Modification Factor) | Implementation Term |
| Crash Scene Safety and Response | Delayed EMS and emergency response times | Enhance EMS and emergency response times | - | Short-Term |
| | Need for better interagency communication & coordination | Enhance emergency response through collaboration with multiple agencies and disciplines | - | Medium-Term |
| | Resource limitations during large-scale incidents | Develop Memorandums of Understanding (MOUs) with neighboring jurisdictions & transit agencies | - | Medium-Term / Long-Term |
| | Lack of structured emergency operation procedures | Development of emergency response operation plans with local authorities & first responders | - | Medium-Term |

H.2

Safety Issues-Proposed Hotspot Roadway Segments and Intersections

H.2.1 Safety Issues at Proposed Hotspot Roadway Segments

Table 1 – Proposed 23 Hotspot Locations for Roadway Segments

| Location Rank | Source List (VRU*/Non-VRU) | Location | On HIN** |
|---------------|----------------------------|--|----------|
| 1 | Both | N York St from Old Shawnee Rd to E Okmulgee St, Muskogee | Yes |
| 2 | Both | S Broadway St from W Jefferson Ave to Maple St, Checotah | Yes |
| 3 | Non-VRU | Highway 62 from East of N 6th St Curves, Morris | Yes |
| 4 | Both | US Highway 62 from N 3740 Rd to N 7th St, Okemah | Yes |
| 5 | Both | EW 133 Rd (270) from N 374 Rd to N 379 Rd | Yes |
| 6 | Non-VRU | Highway 266 from N 4070 Rd to N 4120 Rd | Yes |
| 7 | Non-VRU | Hectorville Rd from N 220 Rd to N 250 Rd | Yes |
| 8 | Non-VRU | E 7th St from S Okmulgee Ave to S Grand Ave, Okmulgee | Yes |
| 9 | Non-VRU | Sharp Rd from S 200 Rd to S 205 Rd, Okmulgee | Yes |
| 10 | Non-VRU | Ferguson Rd from N 310 Rd to Bixby Rd | Yes |
| 11 | Non-VRU | State Highway 9 from State Highway 48 to N 377 Rd | Yes |
| 12 | Non-VRU | State Highway 9 from E 123 Rd to McComb Ave | Yes |
| 13 | Non-VRU | State Highway 56 from EW 1120 Rd to N 3690 Rd, Schoolton | Yes |
| 14 | Non-VRU | Gibson St from N York St to Civitan Park, Muskogee | Yes |
| 15 | Non-VRU | W Highway 16 from Highway 62 to S 134th St W | Yes |
| 16 | Both | E Okmulgee St from S Main St to Spaulding Blvd, Muskogee | No |
| 17 | Both | N 11th St from W Shawnee St to Tamaroa St, Muskogee | Yes |
| 18 | Non-VRU | State Highway 52 from Highway 16 to Massingale Rd | Yes |
| 19 | Non-VRU | US Highway 75 from 3rd St to Bad Creek | Yes |
| 20 | Non-VRU | Conifer Rd from Wilson Rd to Highway 75 | Yes |
| 21 | PI*** | Hwy 48 from N3720 Rd to N3730 Rd, Bearden | No |
| 22 | PI*** | New Lake Rd around Lake Henryetta | No |
| 23 | PI*** | Lake Rd from New Lake Rd to Main St, Henryetta | No |

*VRU: Vulnerable Road User

**HIN: High Injury Network

***These locations were not selected based on the rating and scoring process but were included in the final list as part of the safety concern locations provided through public input (PI). Safety issues for these locations are documented in Section H.2.3

1: N York St from Old Shawnee Rd to E Okmulgee St, Muskogee

- Pavement markings could be refurbished
- There are advance school crossing signs but nothing at the actual crossing
- There is an advanced pedestrian crossing sign but nothing at the actual crossing
- Did not observe southbound speed limit signs

2: S Broadway St from W Jefferson Ave to Maple St, Checotah

- No curve signs
- Northbound and southbound do not have delineators
- Backing accidents could have been caused by not look in the area of nose in parking

3: Highway 62 from East of N 6th St Curves, Morris

- No Shoulders
- Pavement markings should be refurbished
- Westbound close to the west end speed limit increased to 60 MPH with no Curve sign further west speed limit drops to 50 MPH, and again to 40 MPH, and again to 30 MPH in City Limits need for consistent speed.
- Rollover accidents could be caused by ditches on both sides of the roadway
- Add No Passing signs
- Some curve signs do not have advisory speed plaques.
- Only one segment of the roadway have Chevron signs installed
- Not all hazards have Type 3 delineators

4: US Highway 62 from N 3740 Rd to N 7th St, Okemah No delineators

- No shoulders
- Not all hazards have Type 3 delineators
- Are all Curve signs studied for no advisory speed plaques.
- 65 MPH seems fast for the stretch on this roadway
- Add No Passing signs
- Addition of rumble strips

5: EW 133 Rd (270) from N 374 Rd to N 379 Rd

- No delineators
- Need type 3 delineators
- There is a concrete ditch on the north side of the roadway
- Need to add additional speed limit signs
- Consider adding crossroad signs

6: Highway 266 from N 4070 Rd to N 4120 Rd

- No shoulders
- No delineators
- Better delineate the school bus stop area
- Something seems to be happening at this location



- Some stretches of roadway have soft (dirt) shoulders
- Consider mail trucks stopping signs
- Consider speed limit signs, review showed on crossroad sign with a 45 mph advisory speed plaque.
- Deep ditch line on east end of roadway
- Consider more intersection warning signs.

7: Hectorville Rd from N 220 Rd to N 250 Rd

- Install type 3 delineators
- No shoulders
- No delineators
- Pavement marking refurbishing
- Add Bridge Ices Before Road signs
- Saw roadway work without construction signing
- Additional Speed Limit signs
- 25 mph speed drop, using regulatory sign for speed limit plaque instead of a warning plaque, no plaque in opposite direction.
- Delineate school stop area
- Mail truck stopping signing
- Need Stop Ahead Signs and stop bars

8: E 7th St from S Okmulgee Ave to S Grand Ave, Okmulgee

- Backing accident could be caused by drivers backing from nose in parking stalls
- Possible wrong way driving in one way road segment

9: Sharp Rd from S 200 Rd to S 205 Rd, Okmulgee

- Some locations only have 1 Chevron installed, install additional Chevron signs
- No shoulders
- No delineators
- No speed limit signs
- Delineate school bus stops
- Add Advisory Speed Plaques inter Curve warning signs
- Pavement marking refurbishing
- Add additional Curve warning signs

10: Ferguson Rd from N 310 Rd to Bixby Rd

- Mixture of ununiform regulatory and warning signs
- No shoulders
- No delineators
- Pavement marking refurbishing
- No Speed Limit signs

11: State Highway 9 from State Highway 48 to N 377 Rd

- No shoulders
- No delineators
- No Right Lane Must Turn Right sign – west end of corridor
- 65 MPH could be high for this type of roadway
- Speed Limit sign posted only in one direction
- School Bus Stop only posted in one direction
- Mail truck stopping signing
- Delineate school stop area
- Crossroad sign in only one direction

12: State Highway 9 from E 123 Rd to McComb Ave

- Reverse Curve sign in one direction only
- Consider installing Chevron signs
- No Delineators
- No Shoulders
- No Speed Limit signs within corridor
- Delineate school stop area
- School Bus Stop warning sign in only one direction
- Consider Advisory Speed plaques with curve signs
- Consider Chevron signs
- Consider installation of Side Road warning signs
- 65 MPH could be high for this type of roadway

13: State Highway 56 from EW 1120 Rd to N 3690 Rd, Schoolton

- No Delineators
- No Shoulders
- No signs on entire corridor

14: Gibson St from N York St to Civitan Park, Muskogee

- No Right Turn Must Turn Right sign EB Gibson St at York
- No shoulders
- Need pavement marking refurbishing
- Sidewalk extremely close on south side

15: W Highway 16 from Highway 62 to S 134th St W

- Need pavement marking refurbishing
- No Delineators
- No signs on entire corridor

16: E Okmulgee St from S Main St to Spaulding Blvd, Muskogee

- Consider divided Highway and End Divided Highway signs on east end
- Consider EB Speed Limit 25 sign for match east end

17: N 11th St from W Shawnee St to Tamaroa St, Muskogee

- Consider Curve sign NB on south end
- No Delineators
- Consider NB Advance Pedestrian Crossing sign
- Pavement Marking refurbishing
- Consider NB Speed Limit sign prior to pedestrian crossing

18: State Highway 52 from Highway 16 to Massingale Rd

- No Delineators
- No Type 3 Delineators
- Very narrow shoulders
- Mail truck stopping signing
- Consider Speed Limit signs
- Consider Cross Road Warning signs at higher volume crossings

19: US Highway 75 from 3rd St to Bad Creek

- No Delineators
- No Type 3 Delineators
- Very narrow shoulders
- Mail truck stopping signing
- 65 MPH speed limit seems high for roadway
- Delineate the school bus stop

20: Conifer Rd from Wilson Rd to Highway 75

- No Shoulders
- Refurbish Pavement Markings
- Consider Curve Warning signs
- Consider Stop Ahead signing WB west end
- Consider Stop Ahead signs at 4 way stop intersection, consider oversize Stop signs
- Consider Stop Ahead signing WB east end
- Impassable During High Water sign EB, consider hydraulic mediation
- Consider various remediations to lower roadway to gain a larger clearance at the RR overpass
- No Delineators
- No Type 3 Delineators

H.2.2 Safety Issues at Proposed Hotspot Intersections

Table 2 - Proposed 23 Hotspot Locations for Intersections

| Location Rank | Source List (VRU*/Non-VRU) | Location | On HIN** |
|---------------|----------------------------|--|----------|
| 1 | Both | E Shawnee Rd & N Main St, Muskogee | Yes |
| 2 | Non-VRU | E Shawnee Rd & N 6th St, Muskogee | Yes |
| 3 | Non-VRU | Highway 75 and Ferguson Rd | Yes |
| 4 | Non-VRU | N Main St & Court St, Muskogee | Yes |
| 5 | Non-VRU | E Shawnee Rd & N York St, Muskogee | Yes |
| 6 | Non-VRU | E Shawnee Rd & N County Club Rd, Muskogee | Yes |
| 7 | Both | W Okmulgee St & N 32nd St, Muskogee | Yes |
| 8 | Non-VRU | W Shawnee Rd & Chicago St, Muskogee | Yes |
| 9 | Non-VRU | E Shawnee Rd & N 11th St, Muskogee | Yes |
| 10 | Non-VRU | Highway 75 and Hectorville Rd | Yes |
| 11 | Non-VRU | W Okmulgee St & Honor Heights Dr, Muskogee | Yes |
| 12 | Both | W Shawnee Rd & N 32nd St, Muskogee | Yes |
| 13 | Non-VRU | W Okmulgee St & S Main St, Muskogee | Yes |
| 14 | Non-VRU | N Main St & S Kinsley St, Muskogee | Yes |
| 15 | Non-VRU | Highway 75 and Will Sampson Rd, Preston | Yes |
| 16 | Non-VRU | N 32nd St & W Broadway St, Muskogee | Yes |
| 17 | Non-VRU | N 32nd St & Tahlequah St, Muskogee | No |
| 18 | Non-VRU | W Okmulgee St & N 24th St, Muskogee | Yes |
| 19 | Non-VRU | S 7th St & Elgin St, Muskogee | Yes |
| 20 | Non-VRU | W Okmulgee St & N 54th St, Muskogee | Yes |
| 21 | PI*** | Highway 75 & Gun Club Rd | No |
| 22 | PI*** | E 1100 Rd RR Crossing, Onapa | No |
| 23 | PI*** | Lake Rd & W Main St, Henryetta | No |
| 24 | PI*** | S 2nd St & W Main St, Henryetta | No |
| 25 | PI*** | Old Hwy 62 & Hwy 56 | No |
| 26 | PI*** | Hwy 66 & Slick Rd | No |
| 27 | PI*** | E 151st St S & Warrior Rd, Glenpool | No |
| 28 | PI*** | E 151st St S & S Peoria Ave, Glenpool | Yes |
| 29 | PI*** | E 151st St S & S Lewis Ave, Glenpool | No |

VRU: Vulnerable Road User

**HIN: High Injury Network

***These locations were not selected based on the rating and scoring process but were included in the final list as part of the safety concern locations provided through public input (PI). Safety issues for these locations are documented in **Section H.2.3**

1: E Shawnee Rd & N Main St, Muskogee

- This is a large intersection, which may need investigation on yellow and all red interval timing.
- For all 4 intersection legs there is a large distance between the stop bare and the signal heads are approaching the limits for near side heads, two of the 4 approached have near side heads.
- Could reconstruct intersection with free flow right turn islands to pull signal closer to stop location.
- Visibility for vehicles stopped in the intersection for left turns could have sight issues for seeing left turn heads. No left side heads for this issue.
- No signs for westbound double left turns, one lane opens up and could appear to be a through lane.
- Same double left turn lane comments for southbound left turns
- Eastbound left turn lanes and northbound left turn lanes have physical islands protecting the left turn lane entrances.
- No RIGHT LANE MUST TURN RIGHT signs.

2: E Shawnee Rd & N 6th St, Muskogee

- No “” No Pedestrian Crossing” Signs telling peds to use the only crosswalk on west side of intersection.
- Traveling eastbound and westbound could have Cross Road sign with advisory speed panel for highlighting the upcoming intersection. Rear end accidents could be from high speed and no warning.
- Southbound right turn only lane does not have a right arrow lens head in the overhead signal head like other mandatory right turn lanes.
- No RIGHT LANE MUST TURN RIGHT signs.

3: Highway 75 and Ferguson Rd

- Northbound crossroad sign could have an advisory speed limit plaque.
- No northbound speed limit signs
- Southbound crossroad sign could have an advisory speed limit plaque.
- No southbound speed limit signs
- Eastbound and westbound legs narrow with no shoulders no delineators
- Could have higher volume of traffic entering and leaving the casino on east side

4: N Main St & Court St, Muskogee

- Court St approaching from the east into the intersect has bad sight line to the left. Realignment of the east crosswalk to the center of ADA ramps could pull stopping nearer to the intersection
- Court St approaching from the east is downhill, icy in wintertime??
- No intersection luminaires
- Court Street approaches are offset, through lanes do not align, no overhead signs guiding traffic through intersection.
- Traffic may be ignoring the no let-turn signs for east and west

5: E Shawnee Rd & N York St, Muskogee

- Southbound approach is the first traffic signal, consider signal ahead sign with flashing beacon.
- Northbound approach is the first traffic signal, consider signal ahead sign with flashing beacon.
- Visibility for vehicles stopped in the intersection for left turns could have sight issues for seeing left turn heads. No left side heads for this issue.
- This is a large intersection which may need investigation on yellow and all red interval timing.
- No RIGHT LANE MUST TURN RIGHT signs.

6: E Shawnee Rd & N County Club Rd, Muskogee

- “Frontage Road” type of road on south side of intersection seems close, re there people cheating and turning left from either direction?
- No speed limit sign westbound east of intersection
- Traveling westbound east of the intersection this is the first traffic signal and could use Signal Ahead sign.
- Traveling eastbound and westbound could have Cross Road sign with advisory speed panel for highlighting the upcoming intersection. Rear end accidents could be from high speed and no warning.
- Overhead utilities are preventing a 4th luminaire to be installed on the northeast mast arm pole
- Due to the size of the intersection, drivers waiting for left turns from all directions may not be able to see signal indication, add left side signal heads.
- Cross road intersection legs do not have shoulders and do not have speed limit or divided highway signing.

- Delema zone detection could assist mainline traps.
- No RIGHT LANE MUST TURN RIGHT signs.

7: W Okmulgee St & N 32nd St, Muskogee

- Northbound double left is the only double left with a lane use sign
- This is a large intersection, which may need investigation on yellow and all red interval timing.
- For all 4 intersection legs there is a large distance between the stop bare and the signal heads are approaching the limits for near side heads, install near side heads.
- Visibility for vehicles stopped in the intersection for left turns could have sight issues for seeing left turn heads. No left side heads for this issue.
- Southbound approach has a mandatory right turn lane but right-side signal head does not have a right arrow lens.
- Northbound right turn lane does not have lane drop pavement markings
- No RIGHT LANE MUST TURN RIGHT signs.

8: W Shawnee St & Chicago Ave, Muskogee

- W Shawnee St frontage road(s) to the north and south create unsafe turning movements through the W Shawnee St and Chicago Ave intersection.
- There is no room for storage lanes along Chicago St for traffic to turn onto W Shawnee St due to the location of the frontage road.
- Large intersection that may need to be studied to investigate yellow and all red interval timing.
- Consider restricting access from frontage roads onto W Shawnee St at this location.
- Northern frontage road can utilize N. Main St for W Shawnee St access to the east (0.4 miles) and N 6th St for access to the west (0.4 miles)
- Southern frontage road can utilize N 6th St. for W Shawnee St access to the west (0.4)
- Would recommend restricting access to W Shawnee St from frontage road(s) to these (2) locations as they are designed safer.
- Left turn lanes on W Shawnee St could be removed.

9: E Shawnee St & N 11th St, Muskogee

- W Shawnee St frontage road to the north is too close to W. Shawnee St and N 11th St intersection.
- Business access along N 11th St south of W Shawnee St too close to the intersection.
- Consider keeping business access to Grease Monkey, Cooper's Furniture, and Aspen Mini Storage along W Shawnee open, but removing access along N 11th St.
- Dedicated turning and through lanes along N 11th St. to be restriped for visibility.
- Large intersection that may need to be studied to investigate yellow and all red interval timing.

10: Highway 75 and Hectorville Rd

- Unsignalized intersection of local roadway and state highway.
- The speed limit along Highway 75 is 65mph.
- Left hand turn lanes from Highway 75 to westbound and eastbound Hectorville Road are present and have adequate length.
- Acceleration and deceleration lanes along Highway 75 northbound and southbound are not present. Addition of these would reduce right-angle crashes, which are the majority of the incidents reported at this location.

11: W Okmulgee St & Honor Heights Dr, Muskogee

- Depending on where left turn accidents occur, there are no left turn lanes on mainline.
- North leg is narrow and in a one way southbound, could cause confusion, no One Way signs
- No Stop Sign from private drive.

12: W Shawnee Rd & N 32nd St, Muskogee

- Traveling eastbound and westbound could have Cross Road sign with advisory speed panel for highlighting the upcoming intersection. Rear end accidents could be from high speed and no warning.
- Overhead 5 section signal head, is this for mandatory eastbound right turn lane.
- Eastbound crossroad intersection leg has signal ahead sign. No sign for westbound.
- Delema zone detection could assist mainline traps.
- Northbound right turn lane does not have lane drop pavement markings

- No RIGHT LANE MUST TURN RIGHT signs.

13: W Okmulgee St & S Main St, Muskogee

- All 4 legs seem to have permissive left turn signals, consider exclusive.

14: N Main St & S Kinsley St, Muskogee

- No INTERSECTION AHEAD signs along N. Main St on either side of the Kinsley St intersection.
- No designated left turn lanes along N Main St.
- No striping along Kinsley St.
- Large intersection that would benefit from a study to determine if a signal is warranted.

15: Highway 75 and Will Sampson Rd, Preston

- Site distance issues due to horizontal and vertical geometry deficiencies along Highway 75.
- No acceleration or deceleration lanes from Will Sampson Rd for traffic to safely enter onto Highway 75.
- Posted speed limit along Highway 75 is 65mph. Speed is reduced to 55mph near this intersection, but due to site distance issues a reduced speed limit to 45mph may be warranted.
- **A project has been planned by ODOT to address safety concerns at this intersection.**

16: N 32nd St & W Broadway St, Muskogee

- Large intersection with high daily traffic that may need to be studied to investigate yellow and all red interval timing.
- Consider making the easternmost lane along S 32nd St northbound exclusively right turn only to mimic the designated right turn only lane along S 32nd St southbound.
- More aggressive speed and signal enforcement measures could be employed.

17: N 32nd St & Tahlequah St, Muskogee

- Angle of Tahlequah St west of N 32nd St creates sight distance issues.
- Large intersection with high daily traffic that may need to be studied to investigate yellow and all red interval timing.
- More aggressive speed and signal enforcement measures could be employed.

18: W Okmulgee St & N 24th St, Muskogee

- Signalized intersection with multiple points of access to businesses on each corner.
- No designated turning lanes along W Okmulgee St or N 24th St.
- Bicycle lane symbols along N 24th St should be removed as there is not enough room for vehicles and bicycles.
- Consideration of addition of turning signalization to be implemented which could reduce angle turning accidents.

19: S 7th St & Elgin St, Muskogee

- Unsignalized, 4-way stop intersection.
- Denver St intersection along S 7th St approximately 100 ft. north of Elgin St intersection.
- Signed and striped bike route along S 7th St.
- Sight distance issues due to foliage at NW corner.
- Golden Rule Industries on the SE corner likely to increase the heavy truck traffic at the intersection, with entrances 100' east and 100' south of the intersection.
- S 7th St. 45' wide to accommodate two-way traffic and bicycle lanes along each lane. Lanes should be properly striped.

20: W Okmulgee St & N 54th St, Muskogee

- Elementary school located just north of intersection along N 54th St.
- Local road intersection with State Highway; no acceleration or deceleration lanes for traffic from S 54th St. to enter onto W Okmulgee St eastbound or westbound.
- Stop signs located at S 54th St.

Speed limit 45mph. Consideration of reduction to 35mph starting at N 64th St heading east along W Okmulgee St.

H.2.3 Hotspot Locations Identified through Public Input with Associated Safety Concerns

1: E1100 Rd / Old Highway 69, McIntosh County, North of Onapa

- No railroad crossing
- Unsafe tie-in of E1100 Rd to Old Highway 69
- Unpaved

2: Henryetta Park, Okmulgee County

- No place for pedestrians to walk to park
- No crosswalk at intersection
- Lacking signage to alert traffic to pedestrians

3: Lake Road - Henryetta, Okmulgee County

- No place for pedestrians to walk
- Multiple intersections with no crosswalk

4: Highway 9 – Eufaula, McIntosh County

- Flooding issues
- No place for pedestrians to walk
- Intersection lacking crosswalk
- School Zone

5: Highway 48 – Bearden, Okfuskee County

- School Zone
- Dangerous vertical curves cause sight distance issues
- Poor pedestrian signing and striping

6: Highway 56 and Highway 62 Intersection, Okfuskee County

- Unsafe horizontal geometry
- Poor lighting

- Outdated / lacking signing and striping

7: Highway 52 and Bristlecone Rd

- Unsafe horizontal geometry and intersection tie-ins
- Lacking proper signage
- Public input noted a fatality at the intersection recently

8: Highway 62 and 6th St – Morris, Okmulgee County

- School Zone
- No place for pedestrians to walk
- Missing crosswalks and signage
- Site distance issues

9: Highway 75 and Gun Club Rd – Okmulgee, Okmulgee County

- Divided four-lane highway with 65mph posted speed limit
- Unsignalized and high traffic
- Lacking acceleration and deceleration lanes along Highway 75

10: Liberty School – Liberty, Tulsa County

- School Zone with flooding issues
- No place for pedestrians to walk
- Intersection with S 27th E Ave likely needs to be three-way stop

11: Lake Henryetta, Okmulgee County

- Lacking barrier between roadway and lake
- Signage needed for storm events, horizontal geometry, and speed limit

12: E 650 Rd, Rogers and Wagoner County

- High traffic roadways in need of shoulders and clear zone
- Structurally deficient bridge
- Residential area with high truck traffic

13: Highway 66 and Slick Rd – Kellyville, Creek County

- Unsafe tie-in to Highway 66 with sight distance issues
- Railroad crossing
- Poor signage and high posted speed limit along Highway 66

Appendix H

Safety Issues – Hotspot Locations, Recommended Countermeasures and CMF

H.1

Safety Issues-Countermeasures and CMF

Safer Roads

| Safety Category | Safety Concern/Issue | Strategies & Countermeasures | CMF (Crash Modification Factor) | Implementation Term |
|----------------------------|--|---|--|--------------------------|
| Intersections | No or limited overhead signs, no signal heads, move heads closer to stop bar, left turn signs confusing/missing, no left side heads, no right lane must turn right signs, need flashing beacons, no or limited speed limit signs, intersection ahead signs, crossroad signs, pedestrian crossing, no right arrow lens. | Install, improve traffic control devices/signal heads | 0.56 (Install signal head) | Short-Term / Medium-Term |
| | | | 0.78 (Installing stop signs at an unsignalized intersection) | |
| | | Dedicated turn lanes at intersections | 0.73 (Install left turn lane) | Medium-Term |
| | | | 0.834 (Install right turn lane) | |
| | Visibility obstructed from signal heads and crosswalks | Remove all line-of-sight obstructions | 0.62 (Remove fixed object) | Short-Term |
| | Need to evaluate signal timing | Improve signal timing | 0.678 (Install adaptive traffic signal control) | Short-Term / Medium-Term |
| | Travel lanes not properly aligned | Re-align travel lanes | - | Medium-Term |
| | Crosswalk may interfere with traffic line of sight | Re-alignment of crosswalk | - | Medium-Term |
| | No paved shoulders | Improve paved shoulder width | $CMF = e^{-0.070(SW_{new} - SW_{existing})}$ <p>Where: SW_{new} = new (or proposed) average paved shoulder width in feet $SW_{existing}$ = existing average paved shoulder width in feet</p> | Medium-Term / Long-Term |
| | Lane drop pavement markings needed | Installation of proper road markings/stripping | 0.865 (Implement systemic signing and making improvements) | Short-Term |
| No intersection luminaires | Better lighting around intersections | 0.792 (Install intersection lighting) | Medium-Term | |
| | Install red-light cameras | 0.7 | Medium-Term | |

| Safer Roads (cont.) | | | | |
|-------------------------------------|---|---|---|--------------------------|
| Safety Category | Safety Concern/Issue | Strategies & Countermeasures | CMF (Crash Modification Factor) | Implementation Term |
| Roadway Departure | Existing paved shoulders need rumble strips | Safety edges – or minimal edges no drop offs | 0.59 - 0.868 (Install safety edge treatment) | Medium-Term |
| | | Install cable barriers and median barriers | 0.16 (Install cable median barriers) | Long-Term |
| | | Install rumble strips in rural areas | 0.76 - 1.18 (Install rumble strips) | Short-Term |
| | Pavement markings need refurbishing | Install proper road markings/striping | 0.78 - 0.85 (Install edge line pavement marking on rural roads) | Short-Term |
| | | | 0.153 - 0.509 (Modify/Install wrong way sign) | |
| | No or narrow paved shoulders | Improve paved shoulder width | 0.57 (Add new paved shoulder) modify shoulder on rural road | Medium-Term / Long-Term |
| | No delineators, no Type 3 delineators | Install delineator posts | 0.85 - 1.04 (Install post mounted delineator) | Short-Term / Medium-Term |
| | | | 0.55 (Install edge lines, centerlines, post mounted delineator) | |
| | Steep ditches | Reduce ditch angles | - | Long-Term |
| | Sidewalk close to road | Re-align roadway or sidewalk | - | Long-Term |
| Dirt roads, or poor road conditions | Resurface roads and improve bridges | 0.74 - 1.03 (Change street surface condition from poor to good) | Long-Term | |

| Safer Roads (cont.) | | | | | |
|-----------------------------|--|--|--|--|------------|
| Safety Category | Safety Concern/Issue | Strategies & Countermeasures | CMF (Crash Modification Factor) | Implementation Term | |
| Poor signage | No or needed road signs (curve, no passing, crossroad, speed advisory, speed limit, icy bridge, mail truck stopping, stop ahead, mixture of ununiform regulator & warning, chevron, school bus warning, end divided highway) | Inventory all signs (curve, icy bridge, stop ahead, signal ahead, no passing, etc.) and install | 0.85 - 0.93 (Install sign to conform to MUTCD) | Short-Term / Medium-Term | |
| Poor line of sight | Visibility issues with seeing signal heads and crosswalks | Re-align roadway, clear all visual obstructions | 0.62 (Remove fixed object) | Short-Term / Medium-Term | |
| | | | 0.93 (Improve visibility of signal head) | | |
| | | | 0.6 (Install high visibility crosswalk) | | |
| Pedestrian/bike safety | Pedestrian/bike facility | Improving pedestrian crossings are recommendations based on data analysis | - | Short-Term / Medium-Term | |
| | | Provide safe infrastructure for walking, e.g. adequate walking paths, lighting, eliminate pedestrian hazards | 0.52 (Install pedestrian fencing) | Medium-Term | |
| | | | 0.82 (Pedestrian crosswalk at midblock) | | |
| | | Improve facilities and infrastructure risks to non-motorized users | 0.86 (Median treatment) | Medium-Term | |
| | | 0.6 (Install high-visibility crosswalk) | | | |
| | | Vulnerable Road Users: reduced speed limits, and targeted law enforcement | $CMF = e^{(-0.06230 * [Y - X])}$ <p>Y = proposed posted speed limit in MPH</p> <p>X = existing posted speed limit in MPH</p> | Short-Term | |
| | School bus stop not delineated | Better school bus stop delineation | | 0.63 (High visibility yellow, continental crosswalk type at schools) | Short-Term |
| | | | | 0.18 (Presence of bus stop) | |
| Add dedicated bicycle lanes | | | 0.552 (Install separated bike lanes) | Medium-Term / Long-Term | |

Safer People

| Safer People | | | | |
|-------------------------------------|--|---|---------------------------------|--------------------------|
| Safety Category | Safety Concern/Issue | Strategies & Countermeasures | CMF (Crash Modification Factor) | Implementation Term |
| Pedestrian/Bike Safety | Community engagement & education, student drop-off programs | Conduct community education & establish school drop-off procedures | - | Short-Term |
| | Limited rural transit service | Collaboration with Ki Bois Area Transit (KATS) to expand coverage | - | Medium-Term |
| | Transit reliability for daily commuters | Optimize and update public transit schedules for safety and reliability | - | Medium-Term |
| | Lack of public transit access | Expand transit services | - | Long-Term |
| | Lack of transit prioritization | Implement transit signal and lane priority | 0.806 – 0.836 | Medium-Term / Long-Term |
| | Unsafe walking and cycling habits | Launch road user education programs for walking and cycling safety | - | Short-Term |
| | Unsafe crossing behaviors and low driver awareness | Launch public education campaigns | - | Short-Term |
| | Child pedestrian safety near schools | Implement Safe Routes to School programs | 0.87 | Medium-Term |
| High-Risk Driving Behaviors | Aggressive / inattentive driving | Run public education campaigns for safe driving | - | Short-Term |
| | High-risk maneuvers (failed to yield, following too closely, unsafe turns) | Enhance driver education programs in schools | - | Medium-Term |
| Distracted Driving, Speeding | Lack of awareness about emergency safety behavior | Launch public awareness campaigns during emergencies | - | Short-Term |
| | Texting while driving | Organize public pop-up events and campaigns on distracted driving dangers | - | Short-Term |
| Drug-Impaired Driving | Insufficient law enforcement training | Train law enforcement on impaired driving detection | - | Short-Term / Medium-Term |
| | Impaired driving (alcohol, drugs) | High-Visibility Enforcement: Sobriety checkpoints & saturation patrols | - | Short-Term |
| Occupant Safety | Seatbelt and child seat non-compliance | Promote High Visibility Enforcement (HVE) campaigns for occupant protection | - | Short-Term |

Safer Speeds

| Safer Speeds | | | | |
|------------------------------------|---|---|--|----------------------------|
| Safety Category | Safety Concern/Issue | Strategies & Countermeasures | CMF (Crash Modification Factor) | Implementation Term |
| High Risk Driving Behaviors | Lack of coordinated enforcement on violations | Collaboration with multiple agencies to enhance enforcement efforts | - | Medium-Term |
| | Speeding, failed to yield, alcohol/drug, crash clusters | Increased and coordinated Law Enforcement HVE in HIN and hot spots | - | Short-Term |
| Speeding | Speed violations in targeted areas | Install speed safety cameras | 0.865 (Install fixed speed camera) | Medium-Term |
| | Recurring speeding in neighborhood or corridor | Deploy speed trailers | - | Short-Term |
| | Excessive speed and aggressive driving | Implement speed limit enforcement & traffic calming measures | - | Medium-Term / Long-Term |
| Speed Limit Signage | Missing or limited speed limit signs | Conduct speed limit sign inventory and install missing signs | 0.92 (Install variable speed limit sign) | Short-Term |
| Speed Advisory Signage | Missing advisory signs at curves | Install advisory speed signs at curves | 0.92 (Install variable speed limit sign) | Short-Term |
| Speed Monitoring | Lack of real-time speed feedback | Install speed monitoring devices (intersection safety devices) | 0.66 - 0.936 (Install safety device) | Short-Term / Medium-Term |

Post Crash Care

| Post Crash Care | | | | |
|--|--|---|---------------------------------|-------------------------|
| Safety Category | Safety Concern/Issue | Strategies & Countermeasures | CMF (Crash Modification Factor) | Implementation Term |
| Crash Scene Safety and Response | Delayed EMS and emergency response times | Enhance EMS and emergency response times | - | Short-Term |
| | Need for better interagency communication & coordination | Enhance emergency response through collaboration with multiple agencies and disciplines | - | Medium-Term |
| | Resource limitations during large-scale incidents | Develop Memorandums of Understanding (MOUs) with neighboring jurisdictions & transit agencies | - | Medium-Term / Long-Term |
| | Lack of structured emergency operation procedures | Development of emergency response operation plans with local authorities & first responders | - | Medium-Term |

H.2

Safety Issues-Proposed Hotspot Roadway Segments and Intersections

H.2.1 Safety Issues at Proposed Hotspot Roadway Segments

Table 1 – Proposed 23 Hotspot Locations for Roadway Segments

| Location Rank | Source List (VRU*/Non-VRU) | Location | On HIN** |
|---------------|----------------------------|--|----------|
| 1 | Both | N York St from Old Shawnee Rd to E Okmulgee St, Muskogee | Yes |
| 2 | Both | S Broadway St from W Jefferson Ave to Maple St, Checotah | Yes |
| 3 | Non-VRU | Highway 62 from East of N 6th St Curves, Morris | Yes |
| 4 | Both | US Highway 62 from N 3740 Rd to N 7th St, Okemah | Yes |
| 5 | Both | EW 133 Rd (270) from N 374 Rd to N 379 Rd | Yes |
| 6 | Non-VRU | Highway 266 from N 4070 Rd to N 4120 Rd | Yes |
| 7 | Non-VRU | Hectorville Rd from N 220 Rd to N 250 Rd | Yes |
| 8 | Non-VRU | E 7th St from S Okmulgee Ave to S Grand Ave, Okmulgee | Yes |
| 9 | Non-VRU | Sharp Rd from S 200 Rd to S 205 Rd, Okmulgee | Yes |
| 10 | Non-VRU | Ferguson Rd from N 310 Rd to Bixby Rd | Yes |
| 11 | Non-VRU | State Highway 9 from State Highway 48 to N 377 Rd | Yes |
| 12 | Non-VRU | State Highway 9 from E 123 Rd to McComb Ave | Yes |
| 13 | Non-VRU | State Highway 56 from EW 1120 Rd to N 3690 Rd, Schoolton | Yes |
| 14 | Non-VRU | Gibson St from N York St to Civitan Park, Muskogee | Yes |
| 15 | Non-VRU | W Highway 16 from Highway 62 to S 134th St W | Yes |
| 16 | Both | E Okmulgee St from S Main St to Spaulding Blvd, Muskogee | No |
| 17 | Both | N 11th St from W Shawnee St to Tamaroa St, Muskogee | Yes |
| 18 | Non-VRU | State Highway 52 from Highway 16 to Massingale Rd | Yes |
| 19 | Non-VRU | US Highway 75 from 3rd St to Bad Creek | Yes |
| 20 | Non-VRU | Conifer Rd from Wilson Rd to Highway 75 | Yes |
| 21 | MCN*** | Hwy 48 from N3720 Rd to N3730 Rd, Bearden | No |
| 22 | MCN*** | New Lake Rd around Lake Henryetta | No |
| 23 | MCN*** | Lake Rd from New Lake Rd to Main St, Henryetta | No |

VRU: Vulnerable Road User

**HIN: High Injury Network

*** These Locations were not selected based on the rating and scoring process but were included in the final list as part of the safety concern locations provided by MCN: Safety issues for these locations are documents in section H.2.3

1: N York St from Old Shawnee Rd to E Okmulgee St, Muskogee

- Pavement markings could be refurbished
- There are advance school crossing signs but nothing at the actual crossing
- There is an advanced pedestrian crossing sign but nothing at the actual crossing
- Did not observe southbound speed limit signs

2: S Broadway St from W Jefferson Ave to Maple St, Checotah

- No curve signs
- Northbound and southbound do not have delineators
- Backing accidents could have been caused by not look in the area of nose in parking

3: Highway 62 from East of N 6th St Curves, Morris

- No Shoulders
- Pavement markings should be refurbished
- Westbound close to the west end speed limit increased to 60 MPH with no Curve sign further west speed limit drops to 50 MPH, and again to 40 MPH, and again to 30 MPH in City Limits need for consistent speed.
- Rollover accidents could be caused by ditches on both sides of the roadway
- Add No Passing signs
- Some curve signs do not have advisory speed plaques.
- Only one segment of the roadway have Chevron signs installed
- Not all hazards have Type 3 delineators

4: US Highway 62 from N 3740 Rd to N 7th St, Okemah No delineators

- No shoulders
- Not all hazards have Type 3 delineators
- Are all Curve signs studied for no advisory speed plaques.
- 65 MPH seems fast for the stretch on this roadway
- Add No Passing signs
- Addition of rumble strips

5: EW 133 Rd (270) from N 374 Rd to N 379 Rd

- No delineators

- Need type 3 delineators
- There is a concrete ditch on the north side of the roadway
- Need to add additional speed limit signs
- Consider adding crossroad signs

6: Highway 266 from N 4070 Rd to N 4120 Rd

- No shoulders
- No delineators
- Better delineate the school bus stop area
- Something seems to be happening at this location



- Some stretches of roadway have soft (dirt) shoulders
- Consider mail trucks stopping signs
- Consider speed limit signs, review showed on crossroad sign with a 45 mph advisory speed plaque.
- Deep ditch line on east end of roadway
- Consider more intersection warning signs.

7: Hectorville Rd from N 220 Rd to N 250 Rd

- Install type 3 delineators
- No shoulders
- No delineators
- Pavement marking refurbishing
- Add Bridge Ices Before Road signs
- Saw roadway work without construction signing
- Additional Speed Limit signs
- 25 mph speed drop, using regulatory sign for speed limit plaque instead of a warning plaque, no plaque in opposite direction.
- Delineate school stop area
- Mail truck stopping signing
- Need Stop Ahead Signs and stop bars

8: E 7th St from S Okmulgee Ave to S Grand Ave, Okmulgee

- Backing accident could be caused by drivers backing from nose in parking stalls
- Possible wrong way driving in one way road segment

9: Sharp Rd from S 200 Rd to S 205 Rd, Okmulgee

- Some locations only have 1 Chevron installed, install additional Chevron signs
- No shoulders
- No delineators
- No speed limit signs
- Delineate school bus stops
- Add Advisory Speed Plaques inter Curve warning signs
- Pavement marking refurbishing
- Add additional Curve warning signs

10: Ferguson Rd from N 310 Rd to Bixby Rd

- Mixture of ununiform regulatory and warning signs
- No shoulders
- No delineators
- Pavement marking refurbishing
- No Speed Limit signs

11: State Highway 9 from State Highway 48 to N 377 Rd

- No shoulders
- No delineators
- No Right Lane Must Turn Right sign – west end of corridor
- 65 MPH could be high for this type of roadway
- Speed Limit sign posted only in one direction
- School Bus Stop only posted in one direction
- Mail truck stopping signing
- Delineate school stop area
- Crossroad sign in only one direction

12: State Highway 9 from E 123 Rd to McComb Ave

- Reverse Curve sign in one direction only
- Consider installing Chevron signs
- No Delineators
- No Shoulders
- No Speed Limit signs within corridor
- Delineate school stop area
- School Bus Stop warning sign in only one direction
- Consider Advisory Speed plaques with curve signs
- Consider Chevron signs
- Consider installation of Side Road warning signs
- 65 MPH could be high for this type of roadway

13: State Highway 56 from EW 1120 Rd to N 3690 Rd, Schoolton

- No Delineators
- No Shoulders
- No signs on entire corridor

14: Gibson St from N York St to Civitan Park, Muskogee

- No Right Turn Must Turn Right sign EB Gibson St at York
- No shoulders
- Need pavement marking refurbishing
- Sidewalk extremely close on south side

15: W Highway 16 from Highway 62 to S 134th St W

- Need pavement marking refurbishing
- No Delineators
- No signs on entire corridor

16: E Okmulgee St from S Main St to Spaulding Blvd, Muskogee

- Consider divided Highway and End Divided Highway signs on east end
- Consider EB Speed Limit 25 sign for match east end

17: N 11th St from W Shawnee St to Tamaroa St, Muskogee

- Consider Curve sign NB on south end
- No Delineators
- Consider NB Advance Pedestrian Crossing sign
- Pavement Marking refurbishing
- Consider NB Speed Limit sign prior to pedestrian crossing

18: State Highway 52 from Highway 16 to Massingale Rd

- No Delineators
- No Type 3 Delineators
- Very narrow shoulders
- Mail truck stopping signing
- Consider Speed Limit signs
- Consider Cross Road Warning signs at higher volume crossings

19: US Highway 75 from 3rd St to Bad Creek

- No Delineators
- No Type 3 Delineators
- Very narrow shoulders
- Mail truck stopping signing
- 65 MPH speed limit seems high for roadway
- Delineate the school bus stop

20: Conifer Rd from Wilson Rd to Highway 75

- No Shoulders
- Refurbish Pavement Markings
- Consider Curve Warning signs
- Consider Stop Ahead signing WB west end
- Consider Stop Ahead signs at 4 way stop intersection, consider oversize Stop signs
- Consider Stop Ahead signing WB east end
- Impassable During High Water sign EB, consider hydraulic mediation
- Consider various remediations to lower roadway to gain a larger clearance at the RR overpass
- No Delineators
- No Type 3 Delineators

H.2.2 Safety Issues at Proposed Hotspot Intersections

Table 2 - Proposed 23 Hotspot Locations for Intersections

| Location Rank | Source List (VRU*/Non-VRU) | Location | On HIN** |
|---------------|----------------------------|--|----------|
| 1 | Both | E Shawnee Rd & N Main St, Muskogee | Yes |
| 2 | Non-VRU | E Shawnee Rd & N 6th St, Muskogee | Yes |
| 3 | Non-VRU | Highway 75 and Ferguson Rd | Yes |
| 4 | Non-VRU | N Main St & Court St, Muskogee | Yes |
| 5 | Non-VRU | E Shawnee Rd & N York St, Muskogee | Yes |
| 6 | Non-VRU | E Shawnee Rd & N County Club Rd, Muskogee | Yes |
| 7 | Both | W Okmulgee St & N 32nd St, Muskogee | Yes |
| 8 | Non-VRU | W Shawnee Rd & Chicago St, Muskogee | Yes |
| 9 | Non-VRU | E Shawnee Rd & N 11th St, Muskogee | Yes |
| 10 | Non-VRU | Highway 75 and Hectorville Rd | Yes |
| 11 | Non-VRU | W Okmulgee St & Honor Heights Dr, Muskogee | Yes |
| 12 | Both | W Shawnee Rd & N 32nd St, Muskogee | Yes |
| 13 | Non-VRU | W Okmulgee St & S Main St, Muskogee | Yes |
| 14 | Non-VRU | N Main St & S Kinsley St, Muskogee | Yes |
| 15 | Non-VRU | Highway 75 and Will Sampson Rd, Preston | Yes |
| 16 | Non-VRU | N 32nd St & W Broadway St, Muskogee | Yes |
| 17 | Non-VRU | N 32nd St & Tahlequah St, Muskogee | No |
| 18 | Non-VRU | W Okmulgee St & N 24th St, Muskogee | Yes |
| 19 | Non-VRU | S 7th St & Elgin St, Muskogee | Yes |
| 20 | Non-VRU | W Okmulgee St & N 54th St, Muskogee | Yes |
| 21 | MCN*** | Highway 75 & Gun Club Rd | No |
| 22 | MCN*** | E 1100 Rd RR Crossing, Onapa | No |
| 23 | MCN*** | Lake Rd & W Main St, Henryetta | No |
| 24 | MCN*** | S 2nd St & W Main St, Henryetta | No |
| 25 | MCN*** | Old Hwy 62 & Hwy 56 | No |
| 26 | MCN*** | Hwy 66 & Slick Rd | No |
| 27 | MCN*** | E 151st St S & Warrior Rd, Glenpool | No |
| 28 | MCN*** | E 151st St S & S Peoria Ave, Glenpool | Yes |
| 29 | MCN*** | E 151st St S & S Lewis Ave, Glenpool | No |

VRU: Vulnerable Road User

**HIN: High Injury Network

*** These Locations were not selected based on the rating and scoring process but were included in the final list as part of the safety concern locations provided by MCN: Safety issues for these locations are documents in section H.2.3

1: E Shawnee Rd & N Main St, Muskogee

- This is a large intersection, which may need investigation on yellow and all red interval timing.
- For all 4 intersection legs there is a large distance between the stop bare and the signal heads are approaching the limits for near side heads, two of the 4 approached have near side heads.
- Could reconstruct intersection with free flow right turn islands to pull signal closer to stop location.
- Visibility for vehicles stopped in the intersection for left turns could have sight issues for seeing left turn heads. No left side heads for this issue.
- No signs for westbound double left turns, one lane opens up and could appear to be a through lane.
- Same double left turn lane comments for southbound left turns
- Eastbound left turn lanes and northbound left turn lanes have physical islands protecting the left turn lane entrances.
- No RIGHT LANE MUST TURN RIGHT signs.

2: E Shawnee Rd & N 6th St, Muskogee

- No “” No Pedestrian Crossing” Signs telling peds to use the only crosswalk on west side of intersection.
- Traveling eastbound and westbound could have Cross Road sign with advisory speed panel for highlighting the upcoming intersection. Rear end accidents could be from high speed and no warning.
- Southbound right turn only lane does not have a right arrow lens head in the overhead signal head like other mandatory right turn lanes.
- No RIGHT LANE MUST TURN RIGHT signs.

3: Highway 75 and Ferguson Rd

- Northbound crossroad sign could have an advisory speed limit plaque.
- No northbound speed limit signs
- Southbound crossroad sign could have an advisory speed limit plaque.
- No southbound speed limit signs
- Eastbound and westbound legs narrow with no shoulders no delineators
- Could have higher volume of traffic entering and leaving the casino on east side

4: N Main St & Court St, Muskogee

- Court St approaching from the east into the intersect has bad sight line to the left. Realignment of the east crosswalk to the center of ADA ramps could pull stopping nearer to the intersection
- Court St approaching from the east is downhill, icy in wintertime??
- No intersection luminaires
- Court Street approaches are offset, through lanes do not align, no overhead signs guiding traffic through intersection.
- Traffic may be ignoring the no let-turn signs for east and west

5: E Shawnee Rd & N York St, Muskogee

- Southbound approach is the first traffic signal, consider signal ahead sign with flashing beacon.
- Northbound approach is the first traffic signal, consider signal ahead sign with flashing beacon.
- Visibility for vehicles stopped in the intersection for left turns could have sight issues for seeing left turn heads. No left side heads for this issue.
- This is a large intersection which may need investigation on yellow and all red interval timing.
- No RIGHT LANE MUST TURN RIGHT signs.

6: E Shawnee Rd & N County Club Rd, Muskogee

- “Frontage Road” type of road on south side of intersection seems close, re there people cheating and turning left from either direction?
- No speed limit sign westbound east of intersection
- Traveling westbound east of the intersection this is the first traffic signal and could use Signal Ahead sign.
- Traveling eastbound and westbound could have Cross Road sign with advisory speed panel for highlighting the upcoming intersection. Rear end accidents could be from high speed and no warning.
- Overhead utilities are preventing a 4th luminaire to be installed on the northeast mast arm pole
- Due to the size of the intersection, drivers waiting for left turns from all directions may not be able to see signal indication, add left side signal heads.
- Cross road intersection legs do not have shoulders and do not have speed limit or divided highway signing.

- Delema zone detection could assist mainline traps.
- No RIGHT LANE MUST TURN RIGHT signs.

7: W Okmulgee St & N 32nd St, Muskogee

- Northbound double left is the only double left with a lane use sign
- This is a large intersection, which may need investigation on yellow and all red interval timing.
- For all 4 intersection legs there is a large distance between the stop bare and the signal heads are approaching the limits for near side heads, install near side heads.
- Visibility for vehicles stopped in the intersection for left turns could have sight issues for seeing left turn heads. No left side heads for this issue.
- Southbound approach has a mandatory right turn lane but right-side signal head does not have a right arrow lens.
- Northbound right turn lane does not have lane drop pavement markings
- No RIGHT LANE MUST TURN RIGHT signs.

8: W Shawnee St & Chicago Ave, Muskogee

- W Shawnee St frontage road(s) to the north and south create unsafe turning movements through the W Shawnee St and Chicago Ave intersection.
- There is no room for storage lanes along Chicago St for traffic to turn onto W Shawnee St due to the location of the frontage road.
- Large intersection that may need to be studied to investigate yellow and all red interval timing.
- Consider restricting access from frontage roads onto W Shawnee St at this location.
- Northern frontage road can utilize N. Main St for W Shawnee St access to the east (0.4 miles) and N 6th St for access to the west (0.4 miles)
- Southern frontage road can utilize N 6th St. for W Shawnee St access to the west (0.4)
- Would recommend restricting access to W Shawnee St from frontage road(s) to these (2) locations as they are designed safer.
- Left turn lanes on W Shawnee St could be removed.

9: E Shawnee St & N 11th St, Muskogee

- W Shawnee St frontage road to the north is too close to W. Shawnee St and N 11th St intersection.

- Business access along N 11th St south of W Shawnee St too close to the intersection.
- Consider keeping business access to Grease Monkey, Cooper's Furniture, and Aspen Mini Storage along W Shawnee open, but removing access along N 11th St.
- Dedicated turning and through lanes along N 11th St. to be restriped for visibility.
- Large intersection that may need to be studied to investigate yellow and all red interval timing.

10: Highway 75 and Hectorville Rd

- Unsignalized intersection of local roadway and state highway.
- The speed limit along Highway 75 is 65mph.
- Left hand turn lanes from Highway 75 to westbound and eastbound Hectorville Road are present and have adequate length.
- Acceleration and deceleration lanes along Highway 75 northbound and southbound are not present. Addition of these would reduce right-angle crashes, which are the majority of the incidents reported at this location.

11: W Okmulgee St & Honor Heights Dr, Muskogee

- Depending on where left turn accidents occur, there are no left turn lanes on mainline.
- North leg is narrow and in a one way southbound, could cause confusion, no One Way signs
- No Stop Sign from private drive.

12: W Shawnee Rd & N 32nd St, Muskogee

- Traveling eastbound and westbound could have Cross Road sign with advisory speed panel for highlighting the upcoming intersection. Rear end accidents could be from high speed and no warning.
- Overhead 5 section signal head, is this for mandatory eastbound right turn lane.
- Eastbound crossroad intersection leg has signal ahead sign. No sign for westbound.
- Delema zone detection could assist mainline traps.
- Northbound right turn lane does not have lane drop pavement markings
- No RIGHT LANE MUST TURN RIGHT signs.

13: W Okmulgee St & S Main St, Muskogee

- All 4 legs seem to have permissive left turn signals, consider exclusive.

14: N Main St & S Kinsley St, Muskogee

- No INTERSECTION AHEAD signs along N. Main St on either side of the Kinsley St intersection.
- No designated left turn lanes along N Main St.
- No striping along Kinsley St.
- Large intersection that would benefit from a study to determine if a signal is warranted.

15: Highway 75 and Will Sampson Rd, Preston

- Site distance issues due to horizontal and vertical geometry deficiencies along Highway 75.
- No acceleration or deceleration lanes from Will Sampson Rd for traffic to safely enter onto Highway 75.
- Posted speed limit along Highway 75 is 65mph. Speed is reduced to 55mph near this intersection, but due to site distance issues a reduced speed limit to 45mph may be warranted.
- **A project has been planned by ODOT to address safety concerns at this intersection.**

16: N 32nd St & W Broadway St, Muskogee

- Large intersection with high daily traffic that may need to be studied to investigate yellow and all red interval timing.
- Consider making the easternmost lane along S 32nd St northbound exclusively right turn only to mimic the designated right turn only lane along S 32nd St southbound.
- More aggressive speed and signal enforcement measures could be employed.

17: N 32nd St & Tahlequah St, Muskogee

- Angle of Tahlequah St west of N 32nd St creates sight distance issues.
- Large intersection with high daily traffic that may need to be studied to investigate yellow and all red interval timing.
- More aggressive speed and signal enforcement measures could be employed.

18: W Okmulgee St & N 24th St, Muskogee

- Signalized intersection with multiple points of access to businesses on each corner.
- No designated turning lanes along W Okmulgee St or N 24th St.
- Bicycle lane symbols along N 24th St should be removed as there is not enough room for vehicles and bicycles.
- Consideration of addition of turning signalization to be implemented which could reduce angle turning accidents.

19: S 7th St & Elgin St, Muskogee

- Unsignalized, 4-way stop intersection.
- Denver St intersection along S 7th St approximately 100 ft. north of Elgin St intersection.
- Signed and striped bike route along S 7th St.
- Sight distance issues due to foliage at NW corner.
- Golden Rule Industries on the SE corner likely to increase the heavy truck traffic at the intersection, with entrances 100' east and 100' south of the intersection.
- S 7th St. 45' wide to accommodate two-way traffic and bicycle lanes along each lane. Lanes should be properly striped.

20: W Okmulgee St & N 54th St, Muskogee

- Elementary school located just north of intersection along N 54th St.
- Local road intersection with State Highway; no acceleration or deceleration lanes for traffic from S 54th St. to enter onto W Okmulgee St eastbound or westbound.
- Stop signs located at S 54th St.

Speed limit 45mph. Consideration of reduction to 35mph starting at N 64th St heading east along W Okmulgee St.

H.2.3 Hotspot Locations Identified by MCN with Associated Safety Concerns

E 1100 Rd/Old Hwy 69, McIntosh County, N of Onapa

No railroad crossing

ArcGIS Web Map

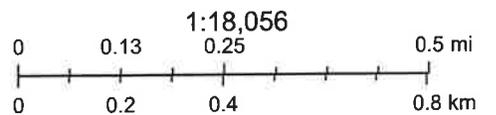


4/11/2025, 9:15:20 AM

18554604e90-layer-39

1855987c8c3-layer-38

17d3a399972-layer-15



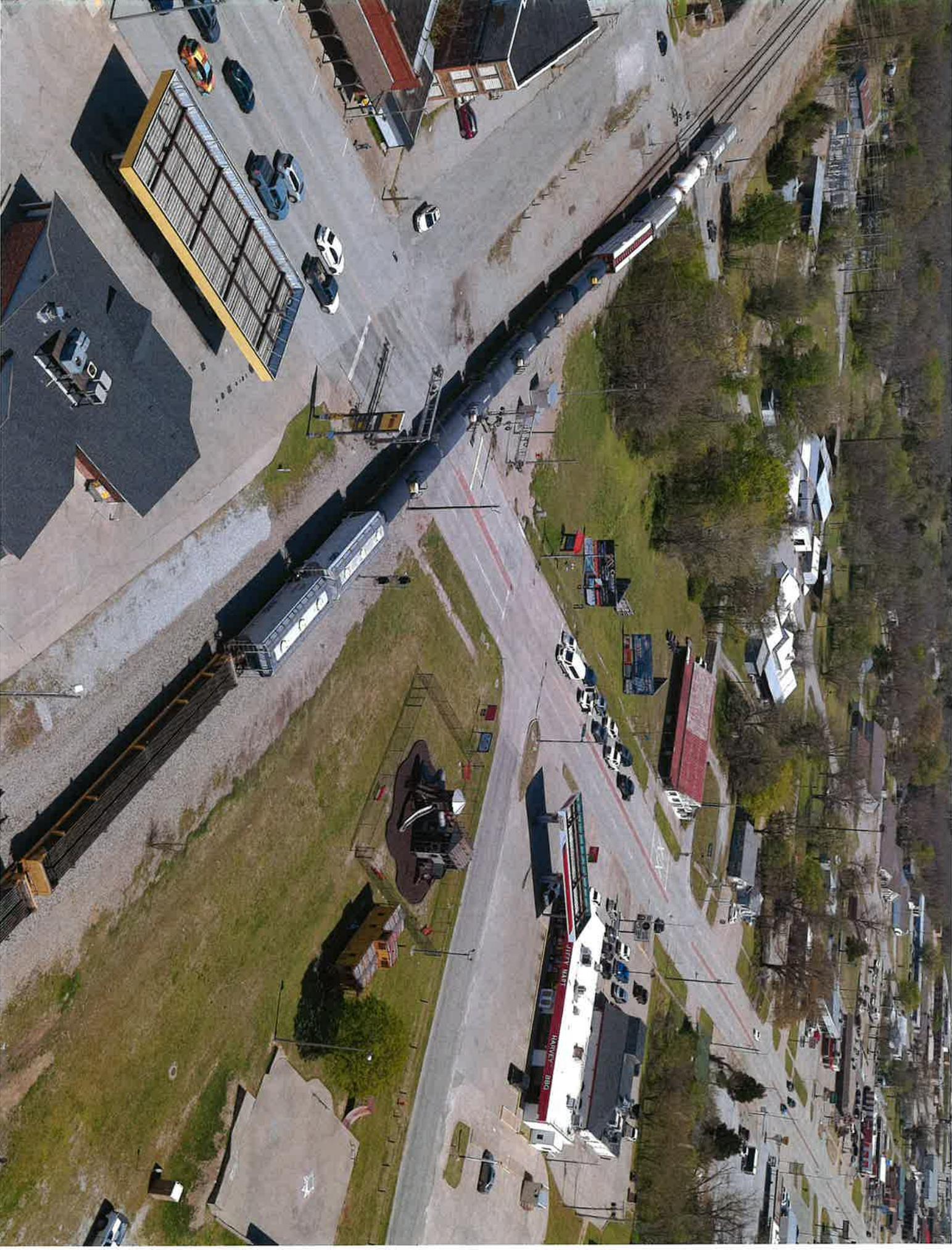
Okmulgee County, Henryetta Park

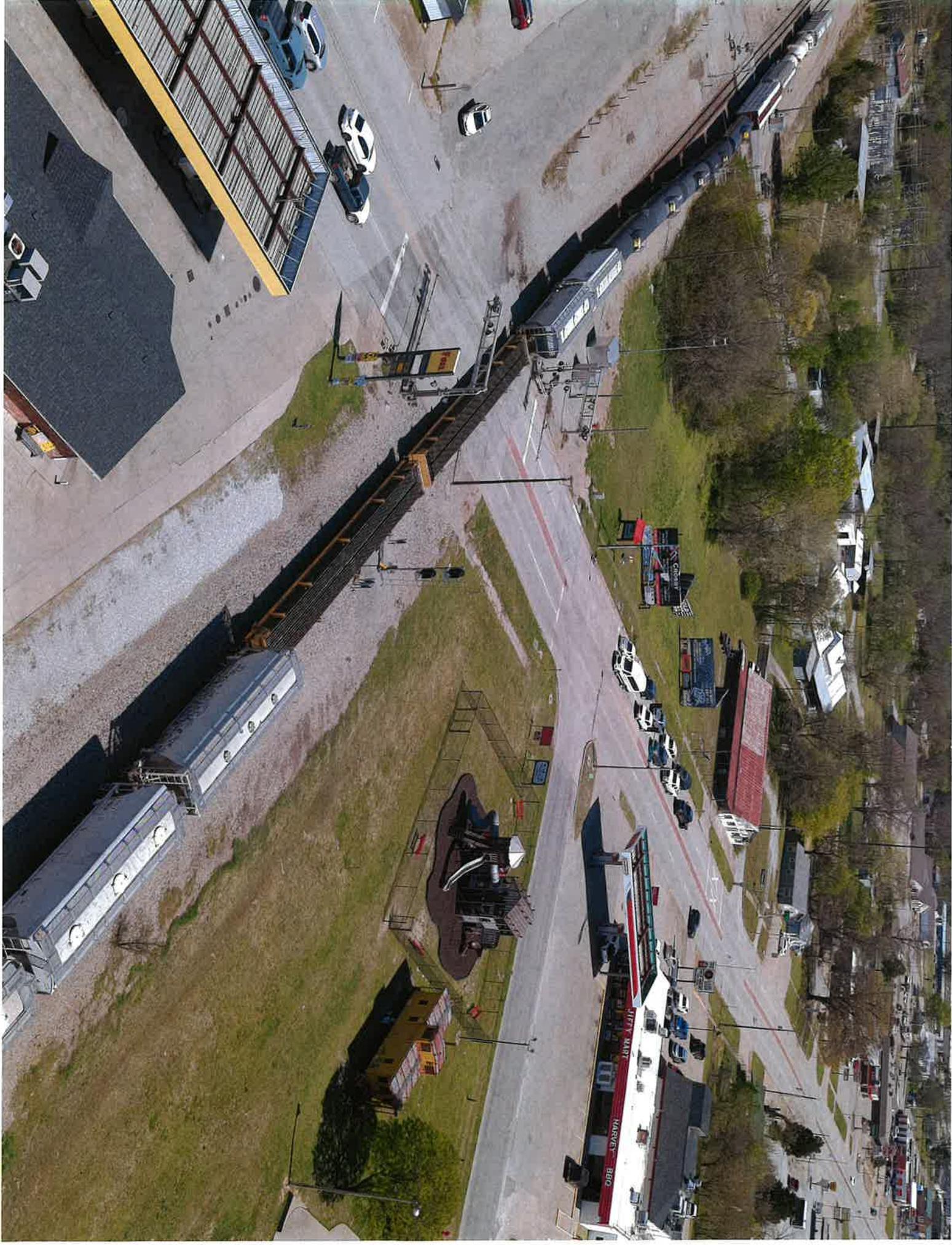
Children from downtown and apartment across from the railroad tracks often walk to park. Intersection is absent of safety mechanisms for pedestrians. Park has no sidewalks.



Apartment

Down Town





Okmulgee County, Lake Road Henryetta

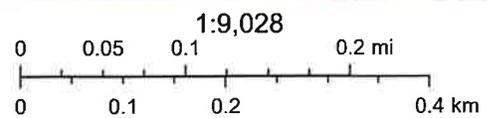
Sidewalk due to safety issue. Residents at apartment complexes walk into town from New Lake Road.

ArcGIS Web Map



4/9/2025, 2:47:54 PM

17d3a399972-layer-15



McIntosh, Eufaula Hwy 9

Flood zone due to poor drainage system. Eufaula school parking lot, Coon Creek Rd backs up to the north, floods on north and south of Hwy 9 approx ¼ mile.

ArcGIS Web Map



4/9/2025, 3:04:19 PM



17d3a399972-layer-15

1:4,514
0 0.03 0.06 0.12 mi
0 0.05 0.1 0.2 km

Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Maxar

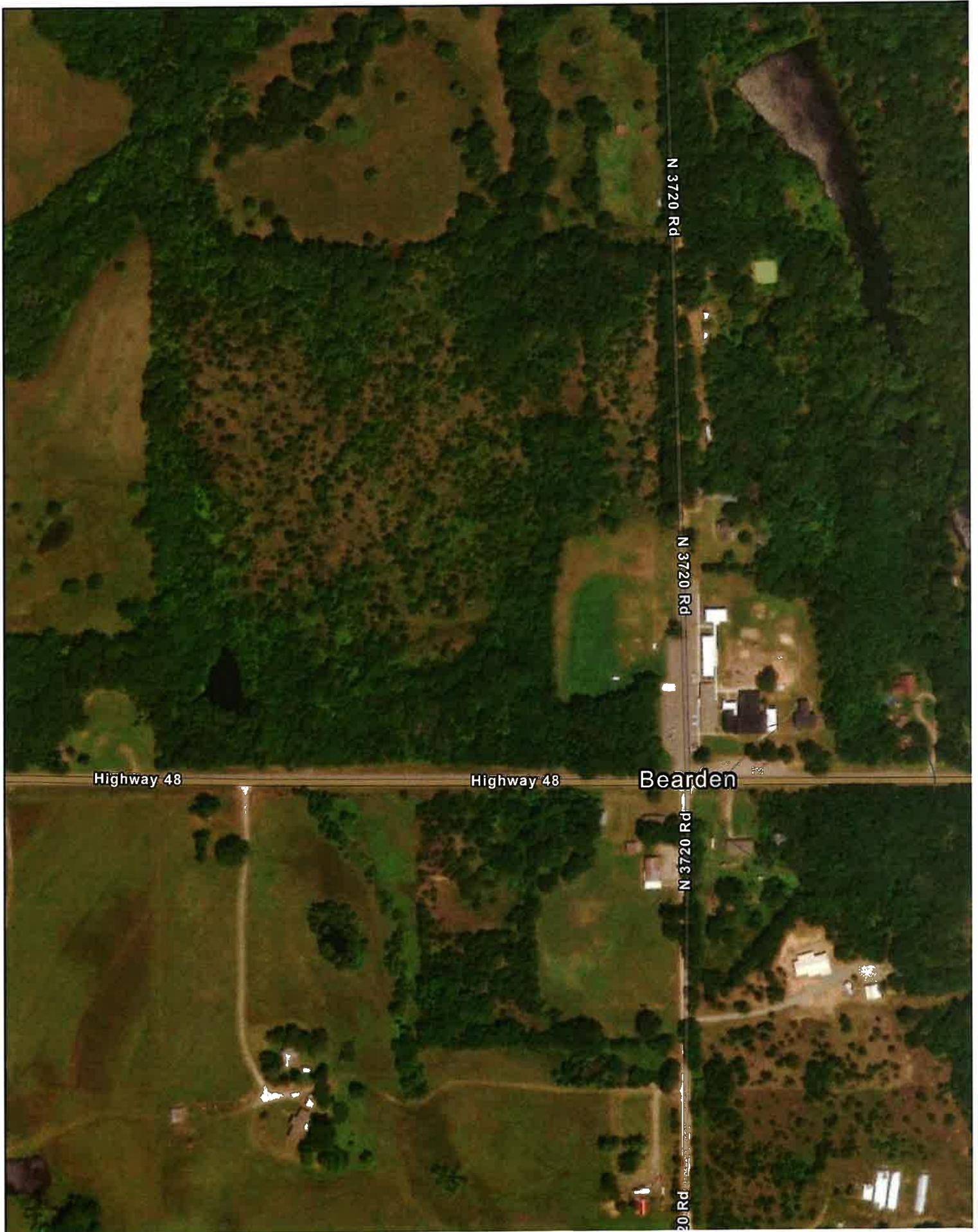
Hwy 48 Bearden, Okfuskee County

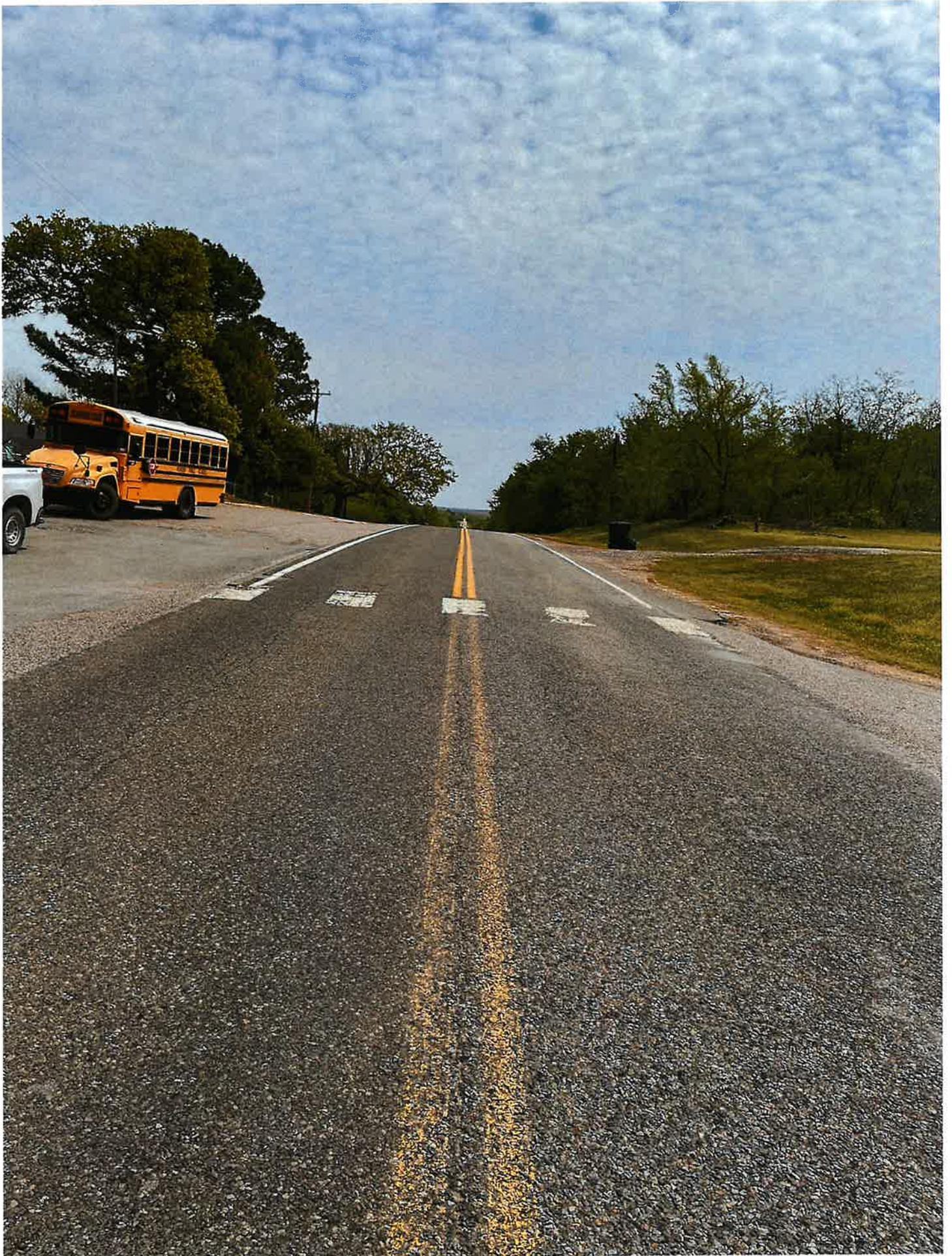
School zone. Hwy 48 turning left from the school is a hill, poor visibility.

ArcGIS Web Map



ArcGIS Web Map

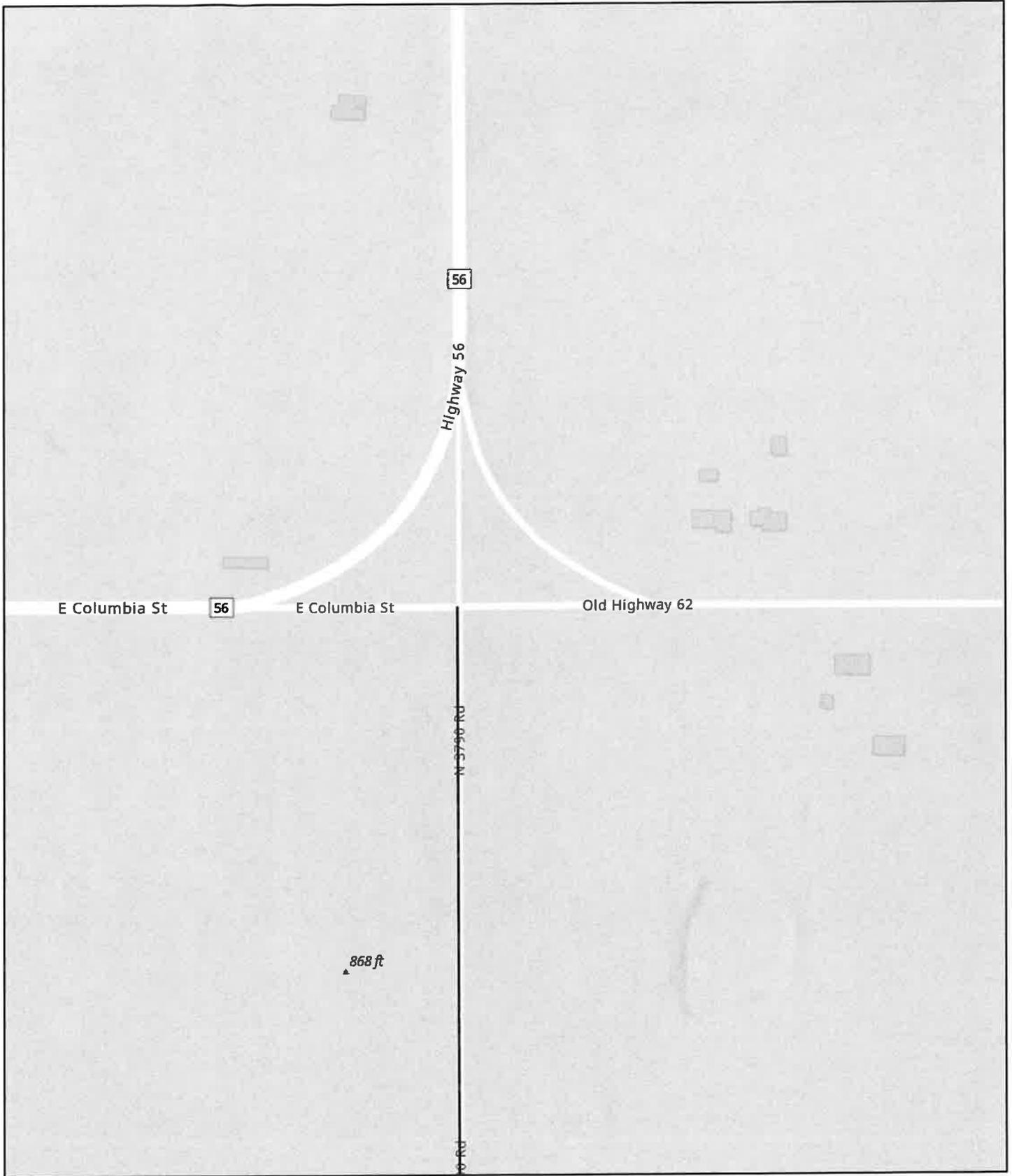




HWY 56/Hwy 62 intersection

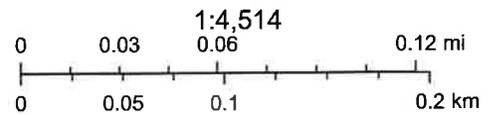
Lacks signage for oncoming traffic, poor lighting. Okfuskee County West of Okemah

ArcGIS Web Map

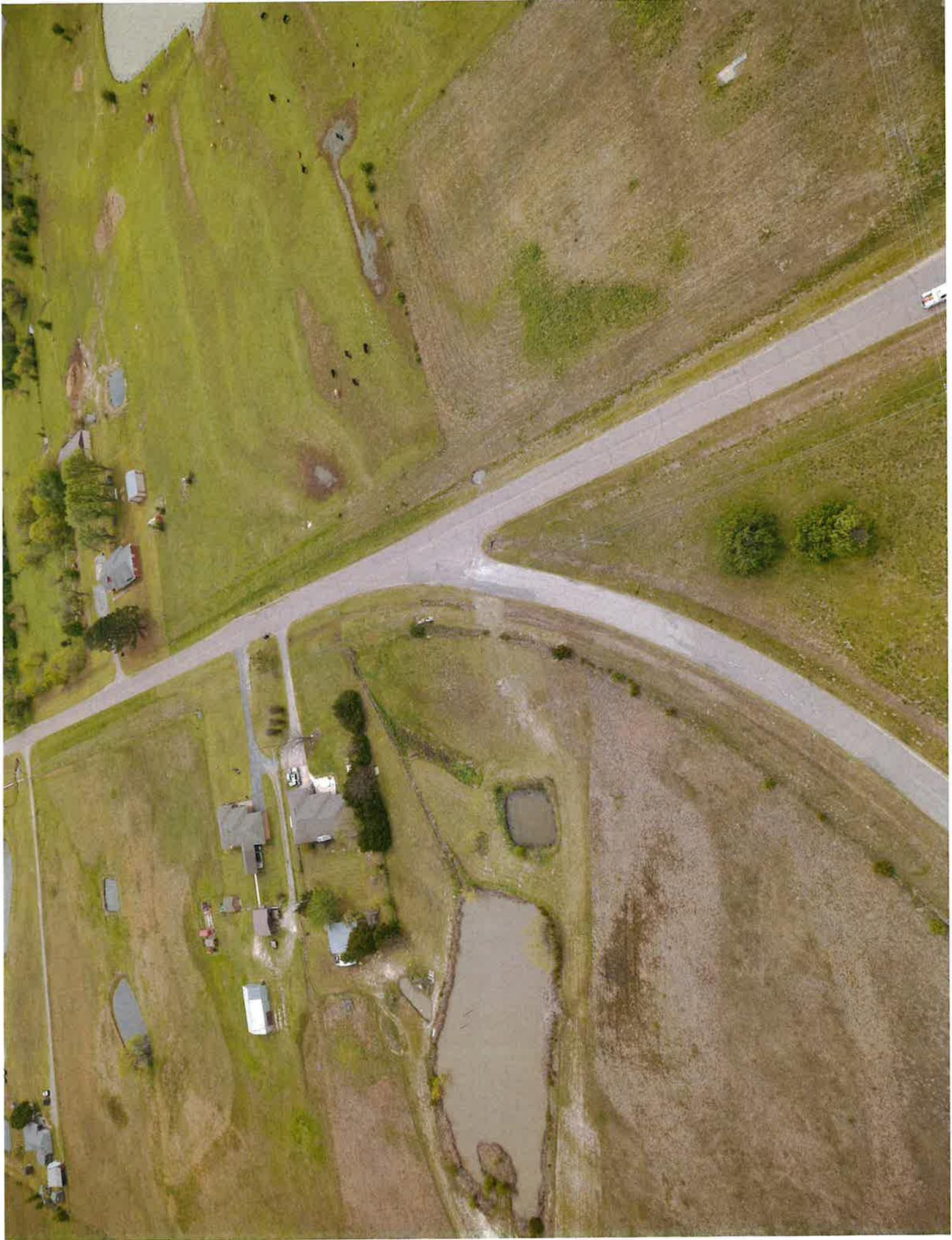


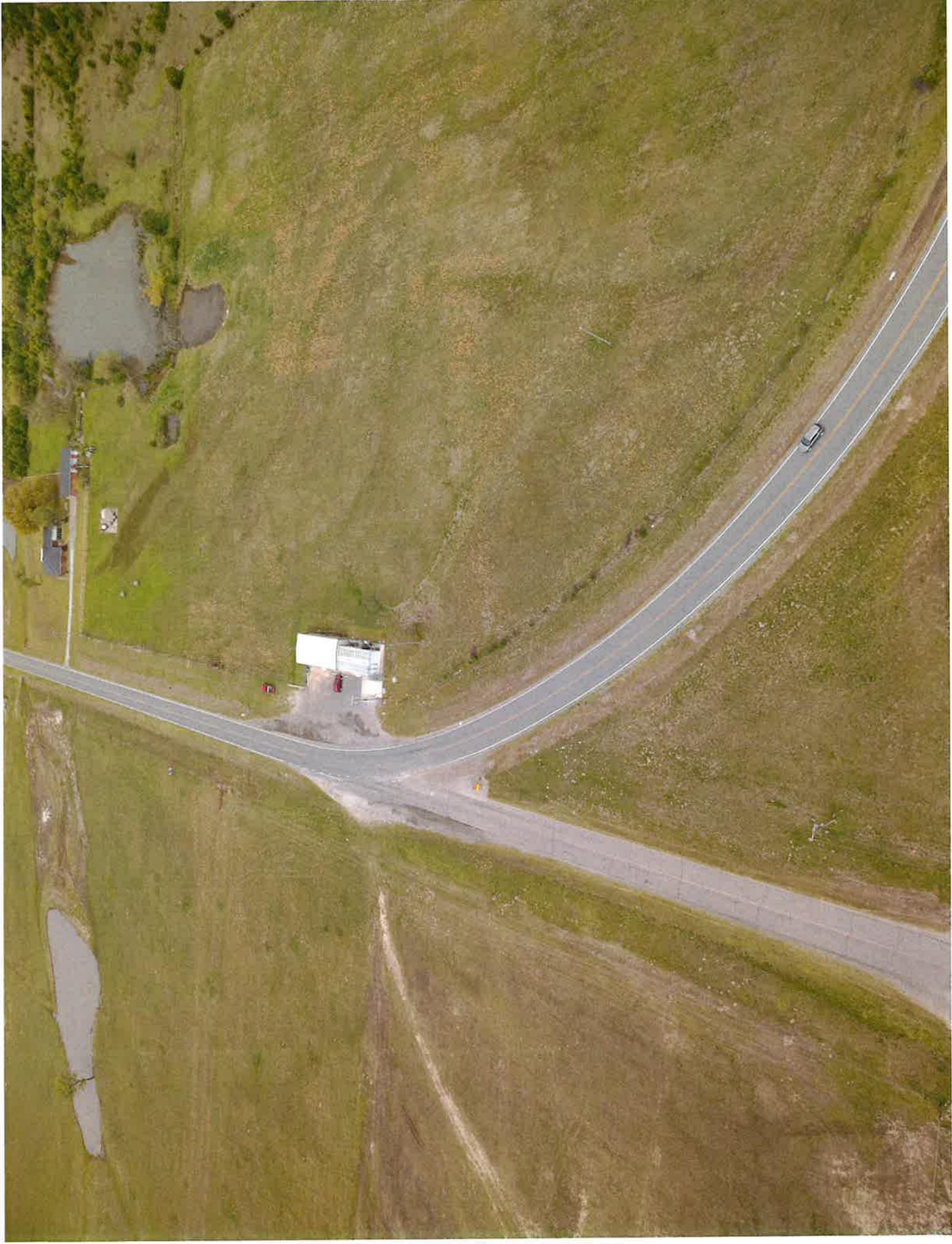
4/11/2025, 12:39:20 PM

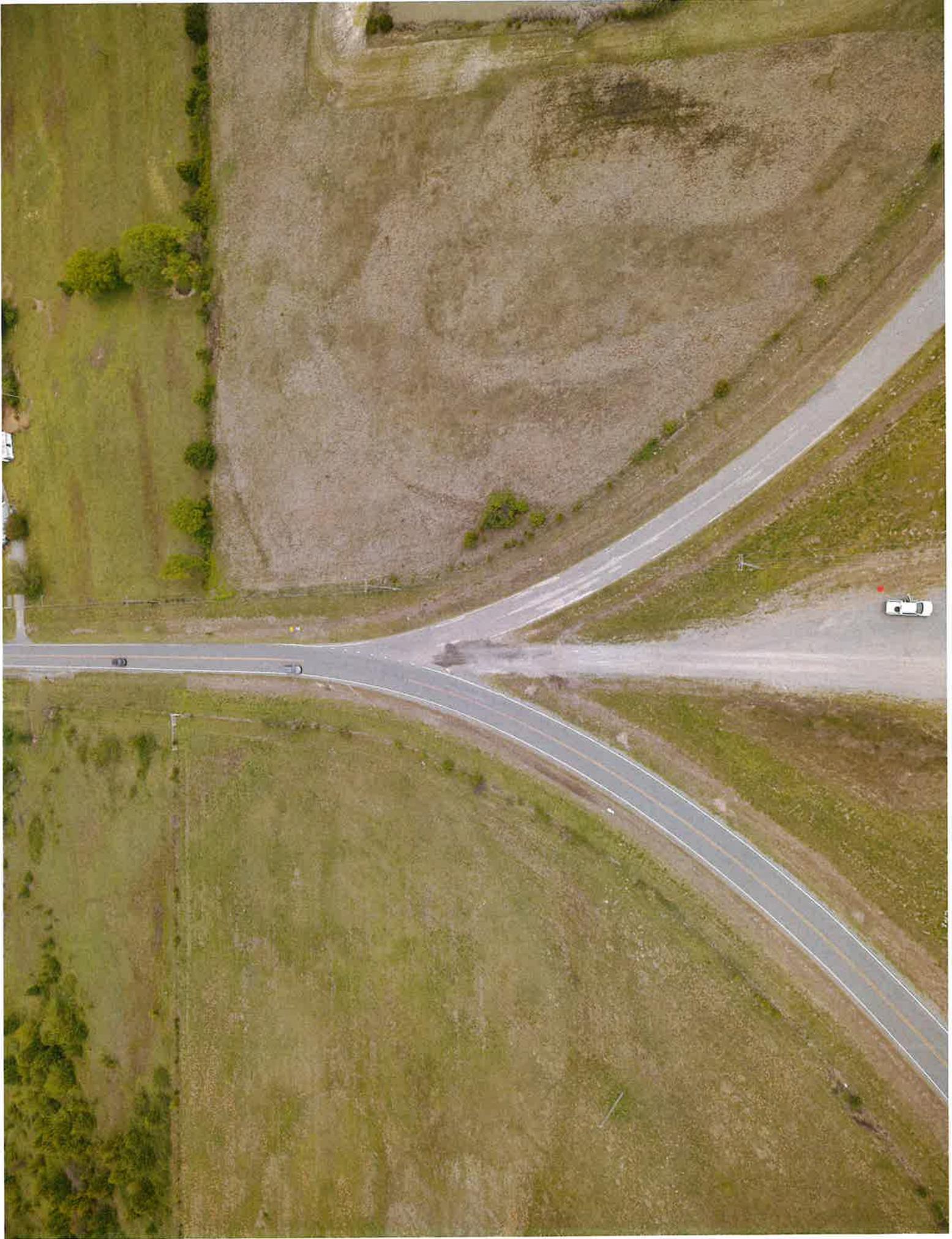
- 18554604e90-layer-39
- 17d3a399972-layer-15







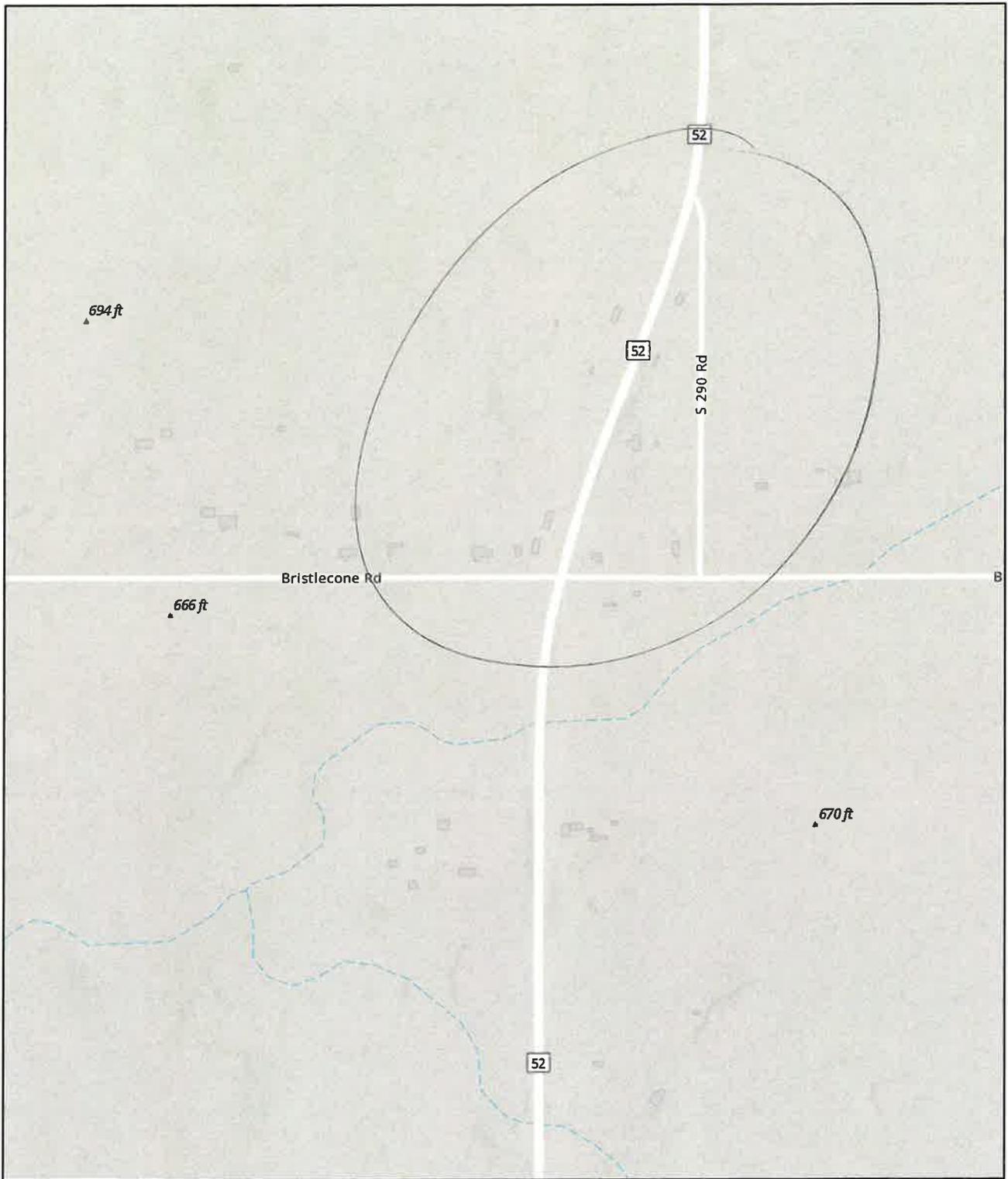




Hwy 52/Bristlecone Rd

Intersection prone to accidents, including fatalities per public input

ArcGIS Web Map



4/11/2025, 2:02:35 PM

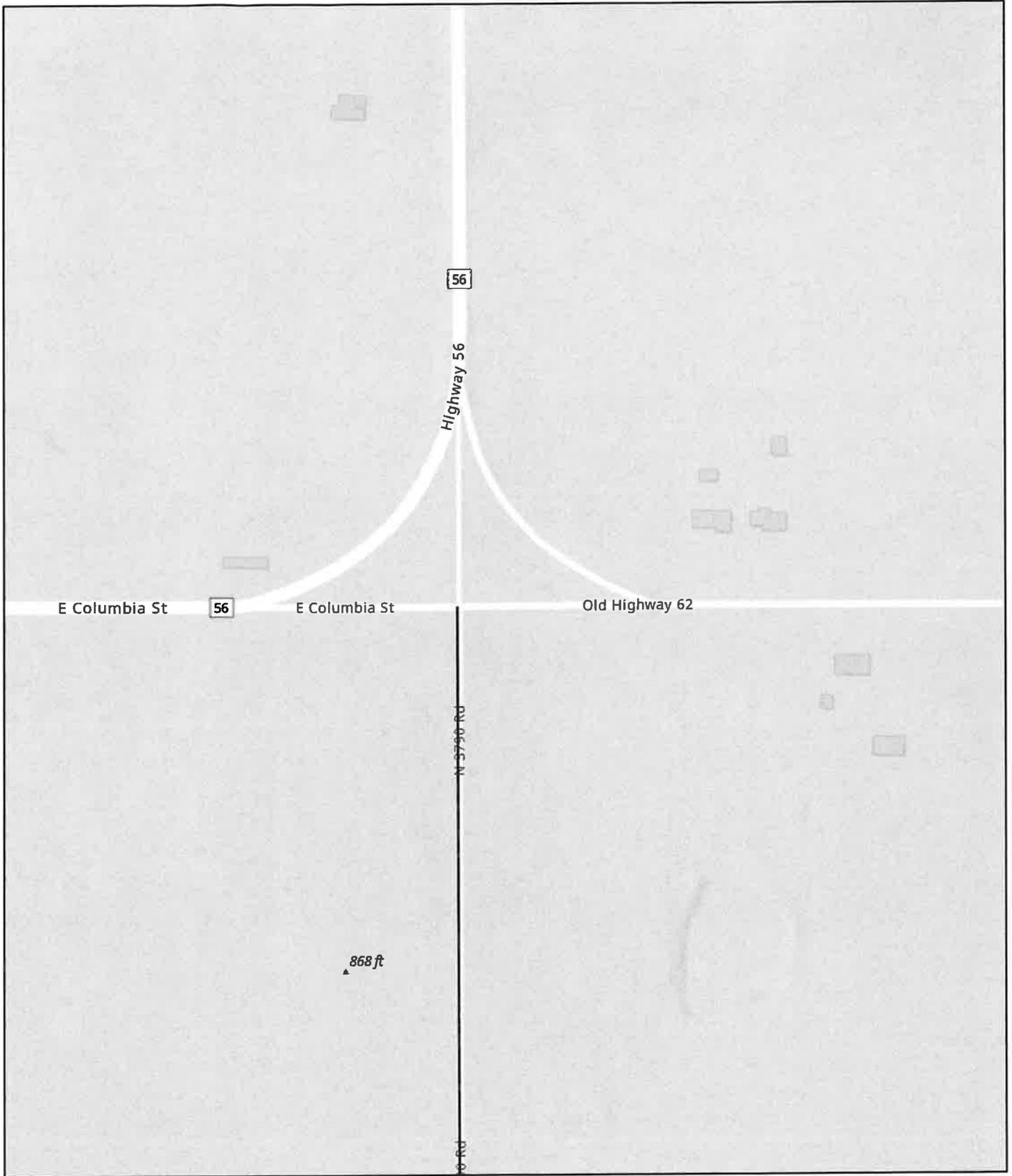
 17d3a399972-layer-15

Esri, NASA, NGA, USGS, FEMA, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

HWY 56/Hwy 62 intersection

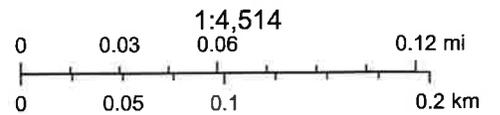
Lacks signage for oncoming traffic, poor lighting. Okfuskee County West of Okemah

ArcGIS Web Map

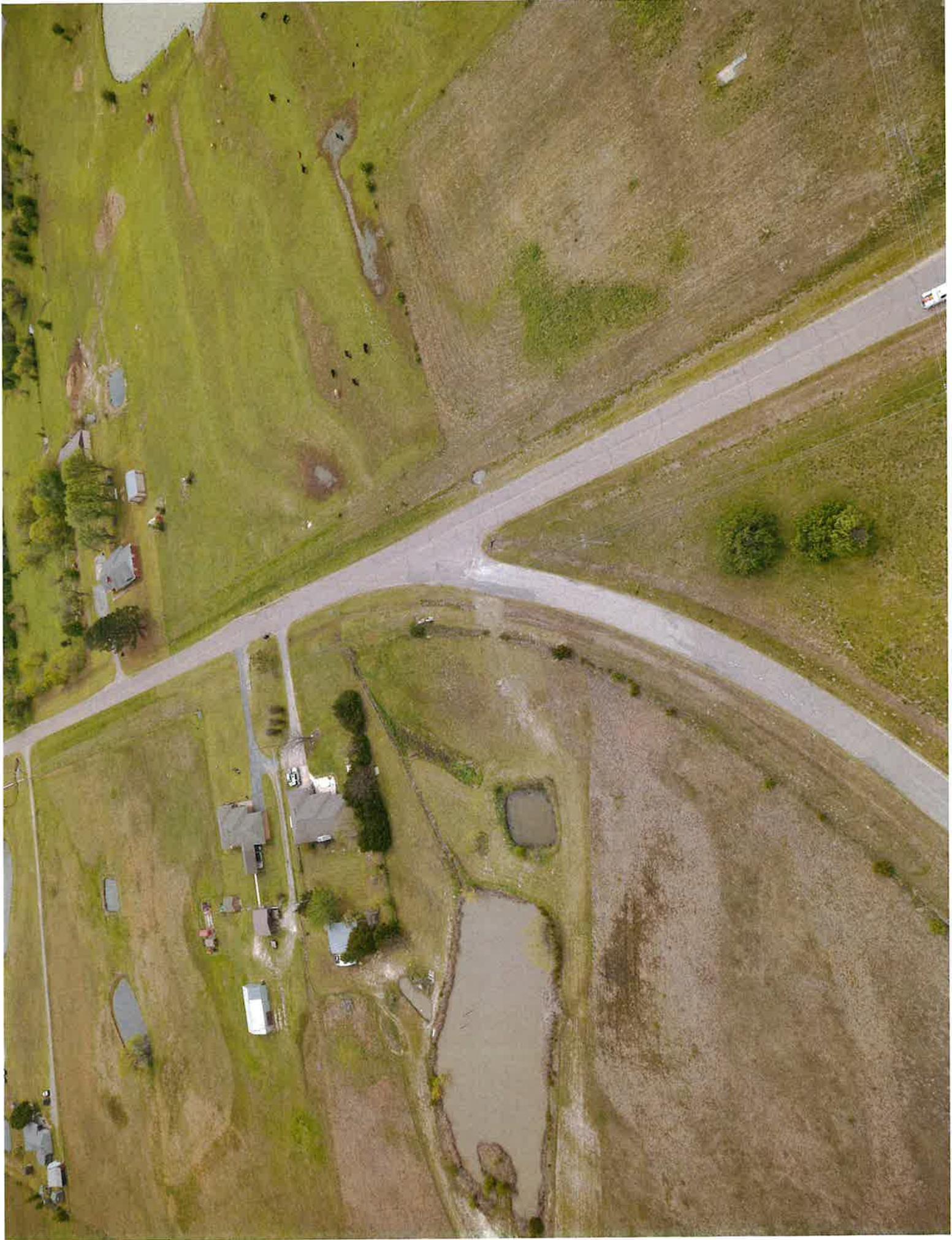


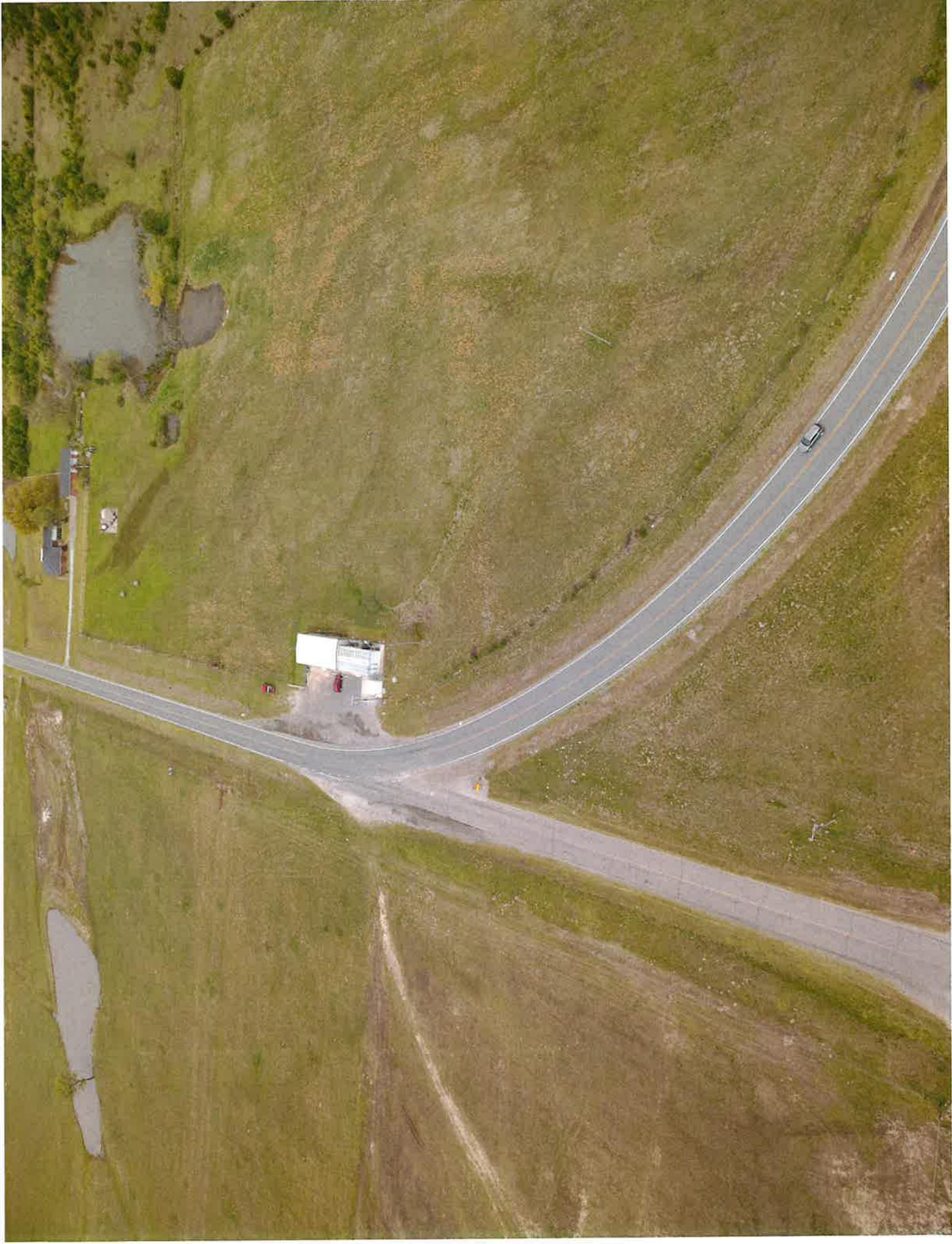
4/11/2025, 12:39:20 PM

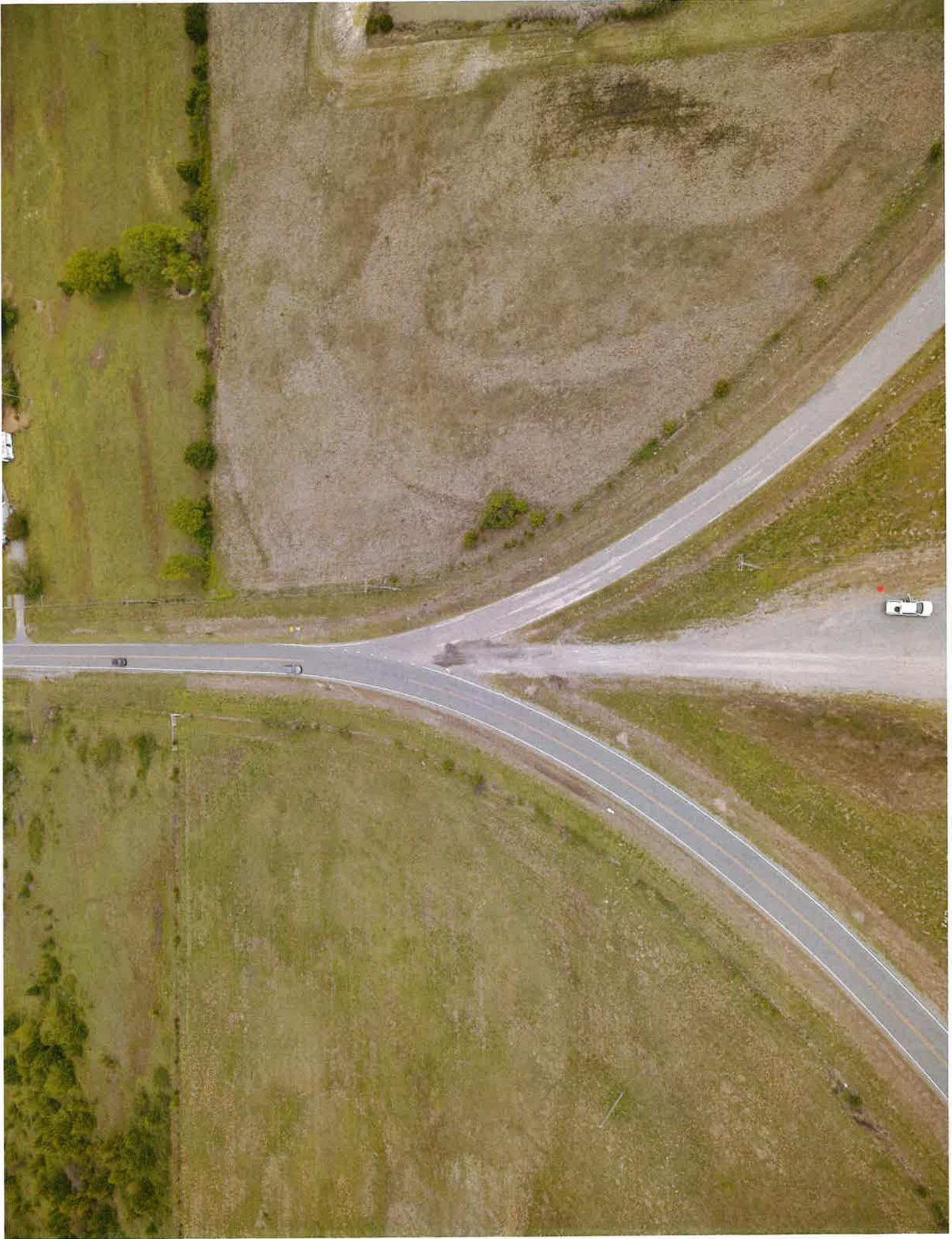
- 18554604e90-layer-39
- 17d3a399972-layer-15







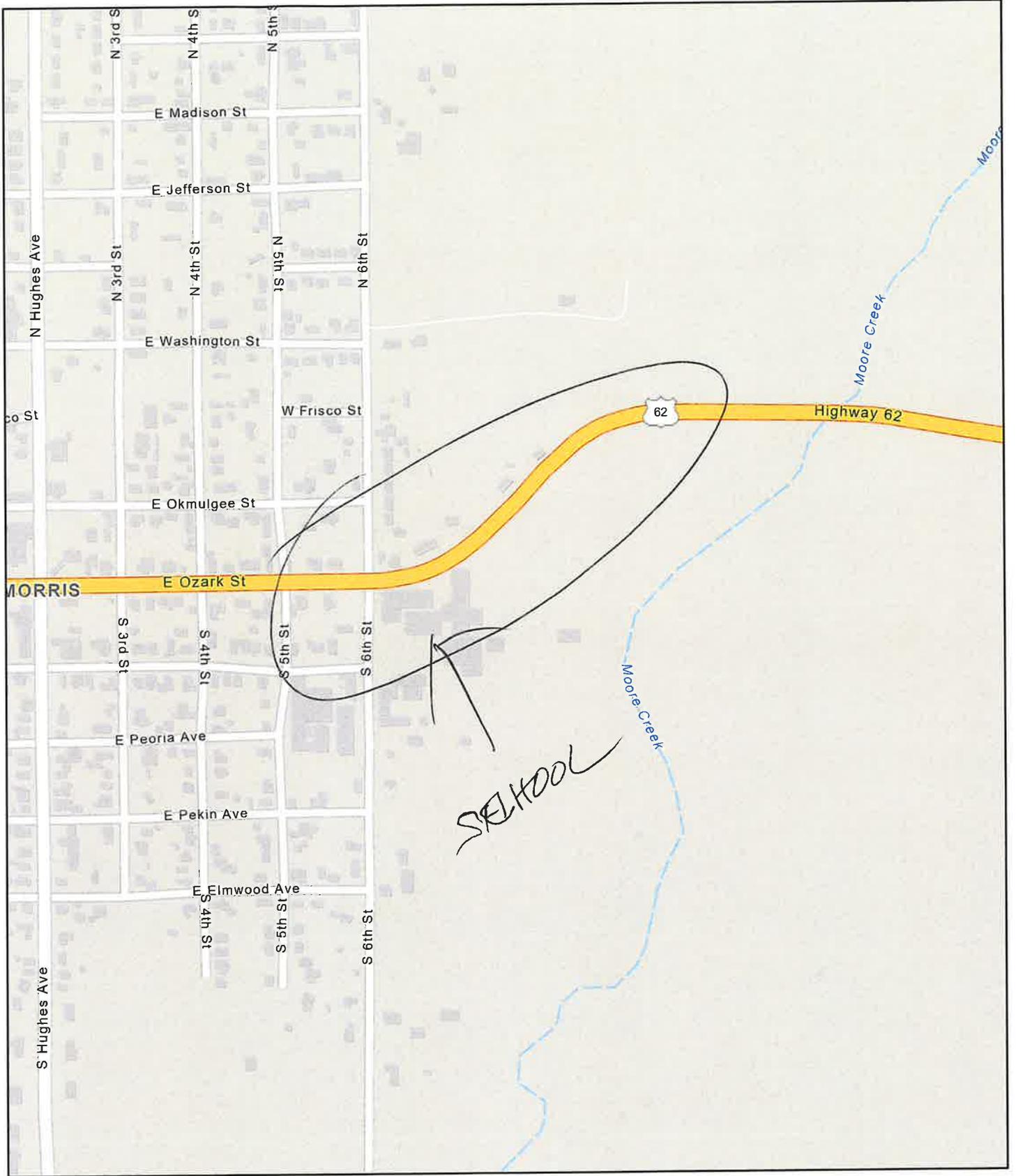




Hwy 62/6th St, Morris, Okmulgee County

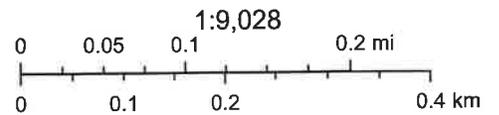
Hwy 62 curves at 6th St. 7 crashes, 2 incapacitating. Intersection has school SE corner.

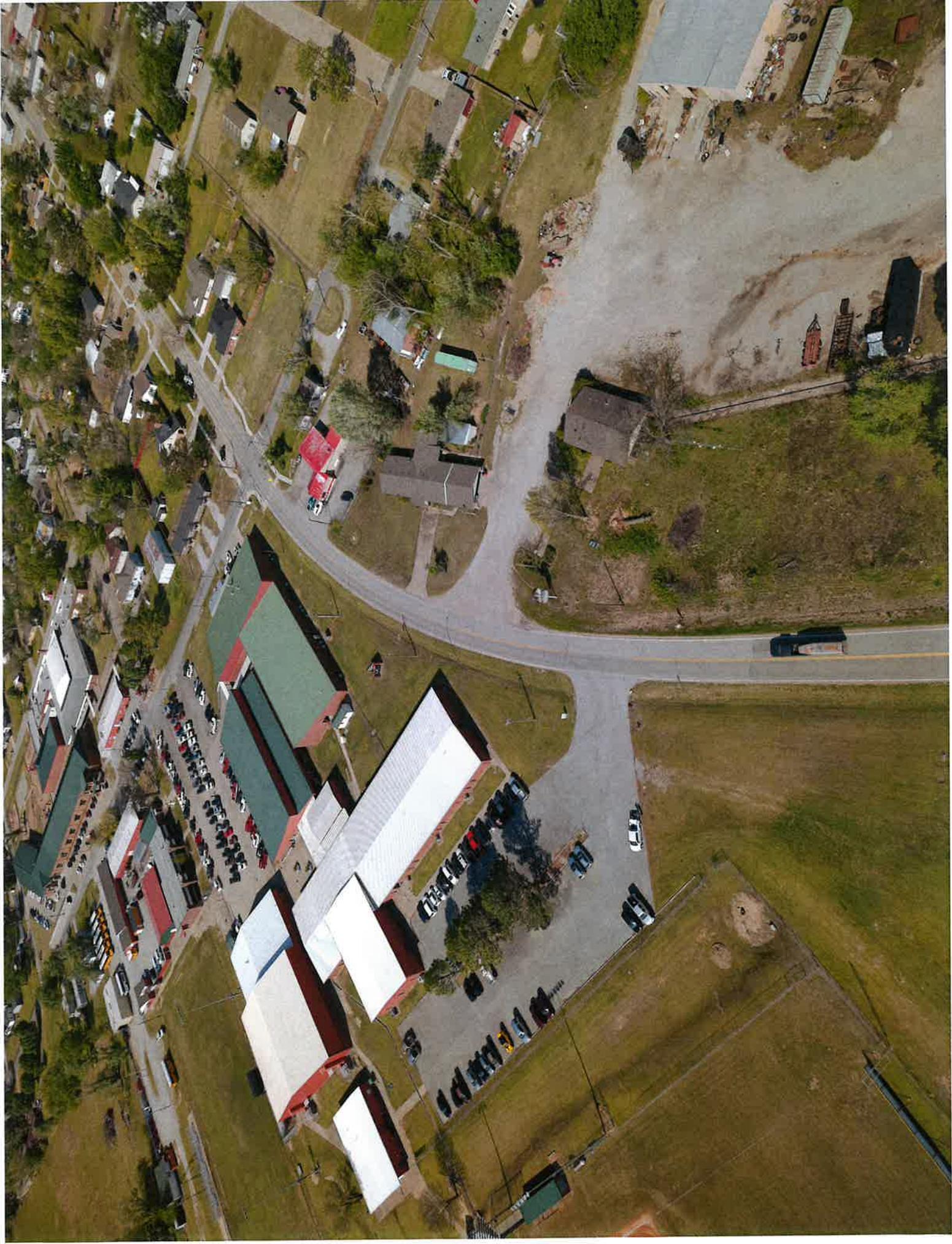
ArcGIS Web Map



4/11/2025, 9:40:02 AM

 17d3a399972-layer-15

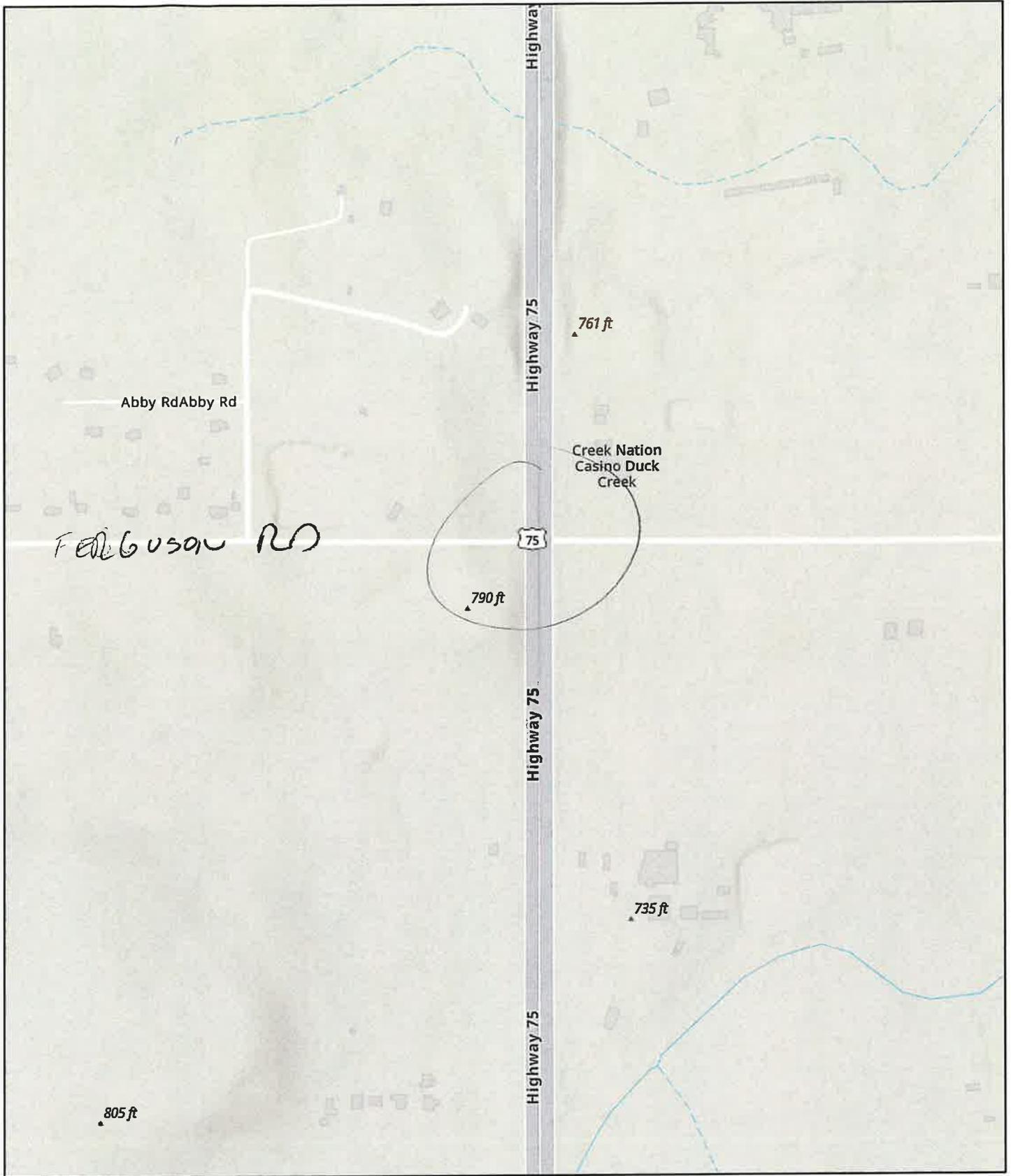




Hwy 75/Ferguson Rd intersection

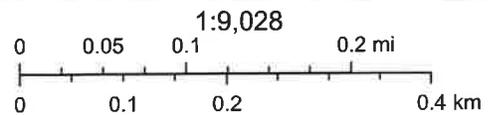
High traffic, high accident.

ArcGIS Web Map



4/11/2025, 1:13:23 PM

 17d3a399972-layer-15

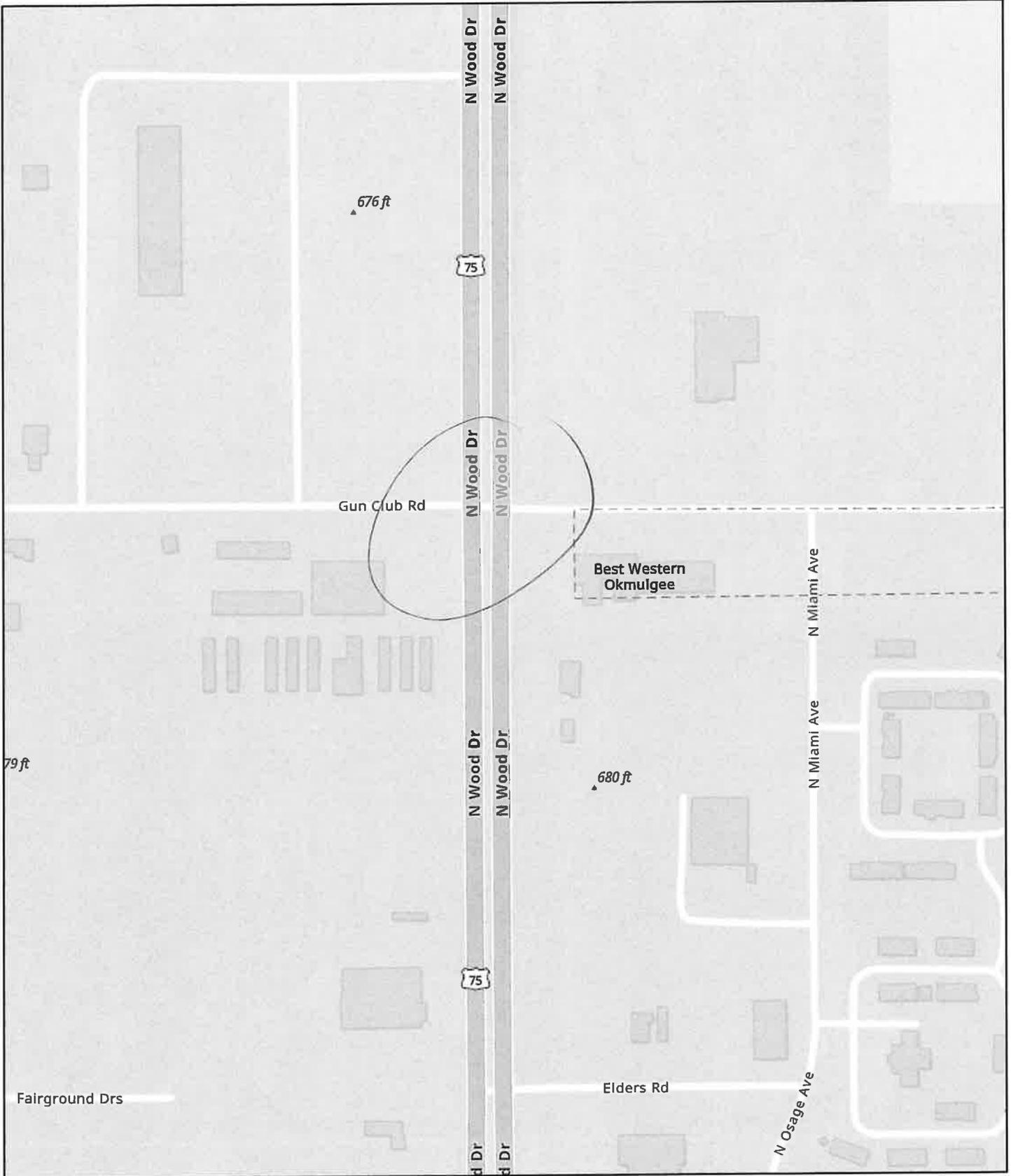




Hwy 75/Gun Club Rd intersection

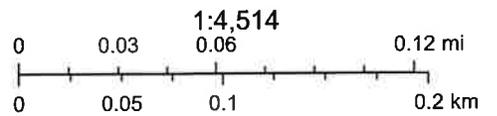
High traffic, high accident

ArcGIS Web Map



4/11/2025, 1:12:41 PM

 17d3a399972-layer-15

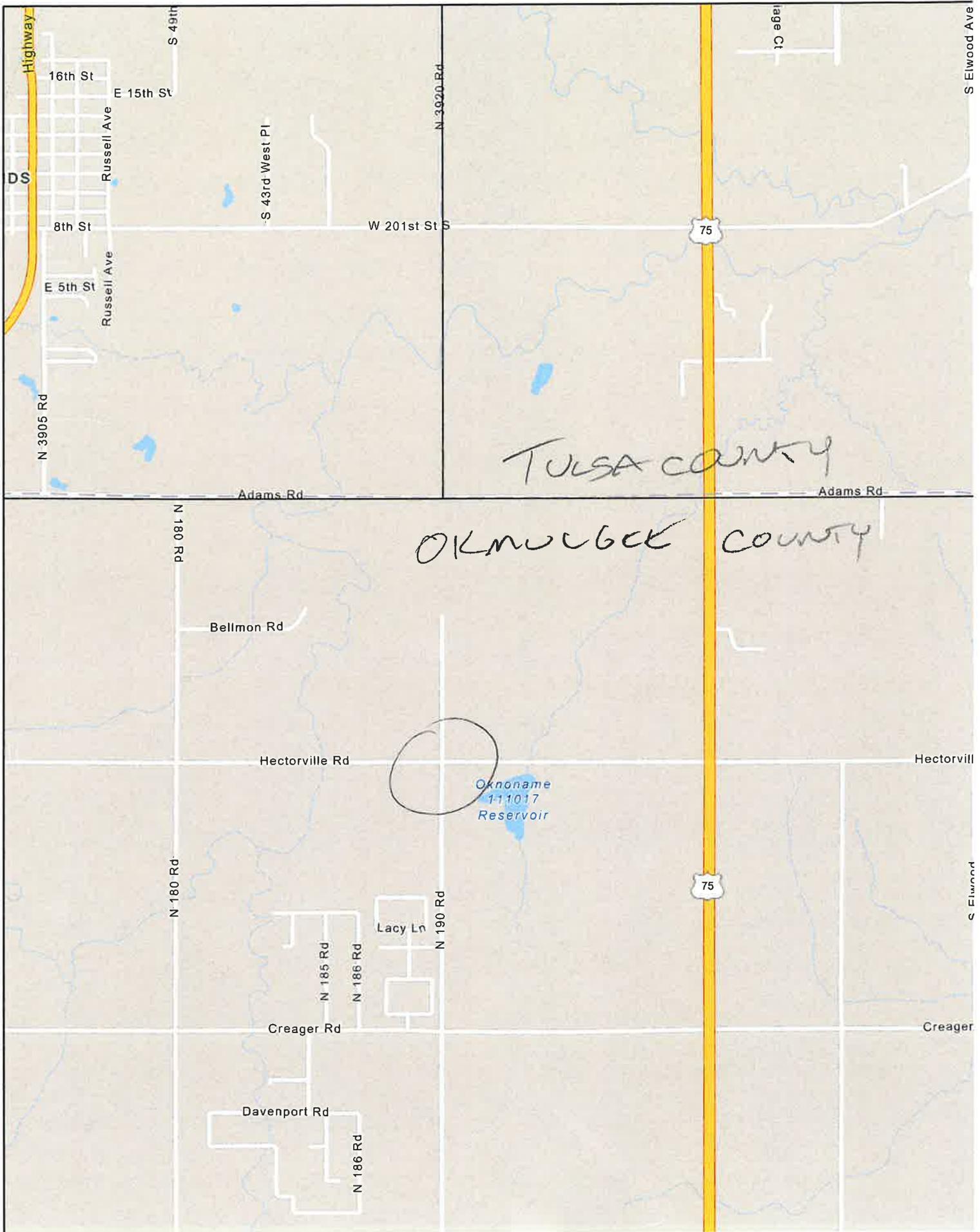


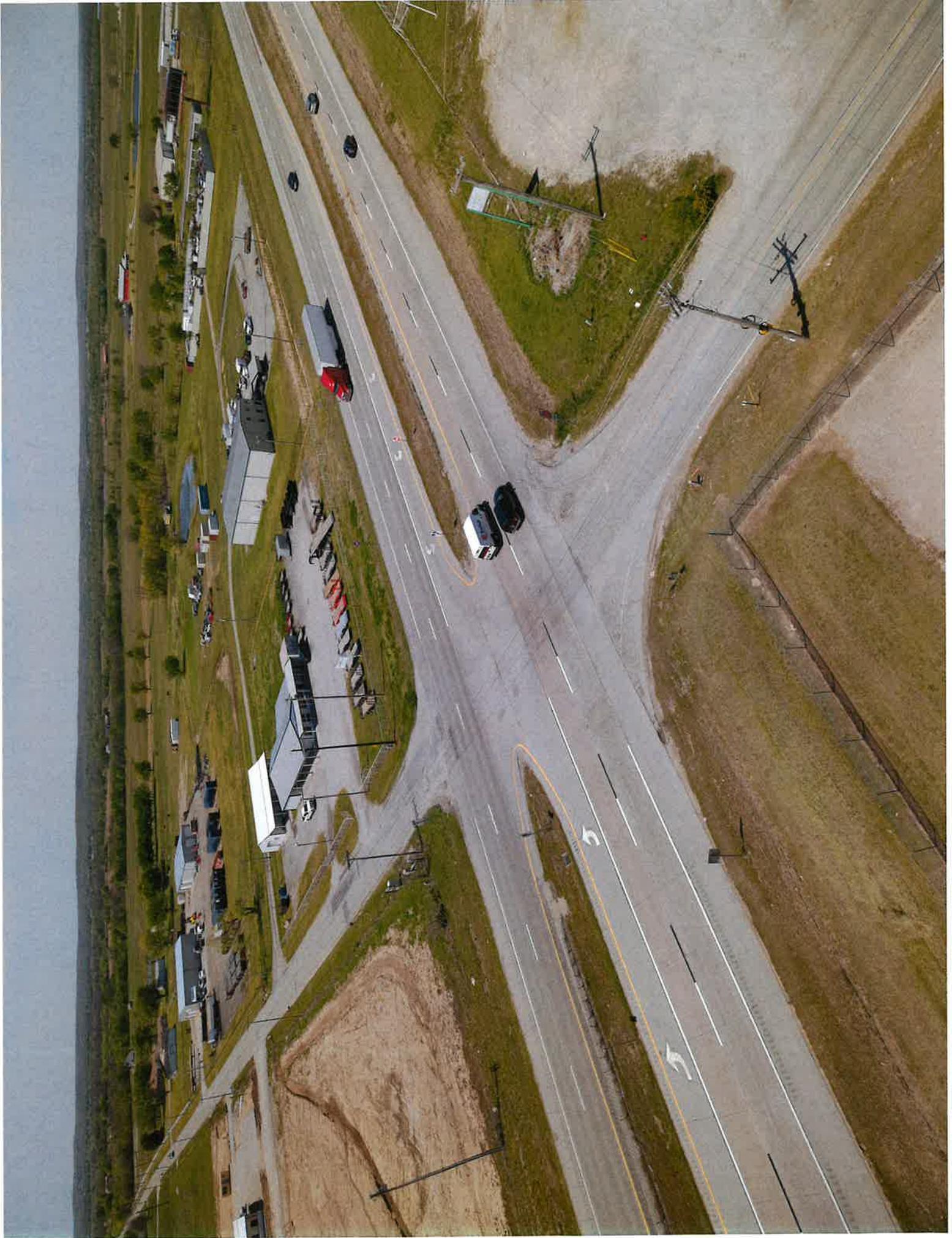


Hwy 75 – Hectorville intersection

High crash, lacks room for left turns.

ArcGIS Web Map

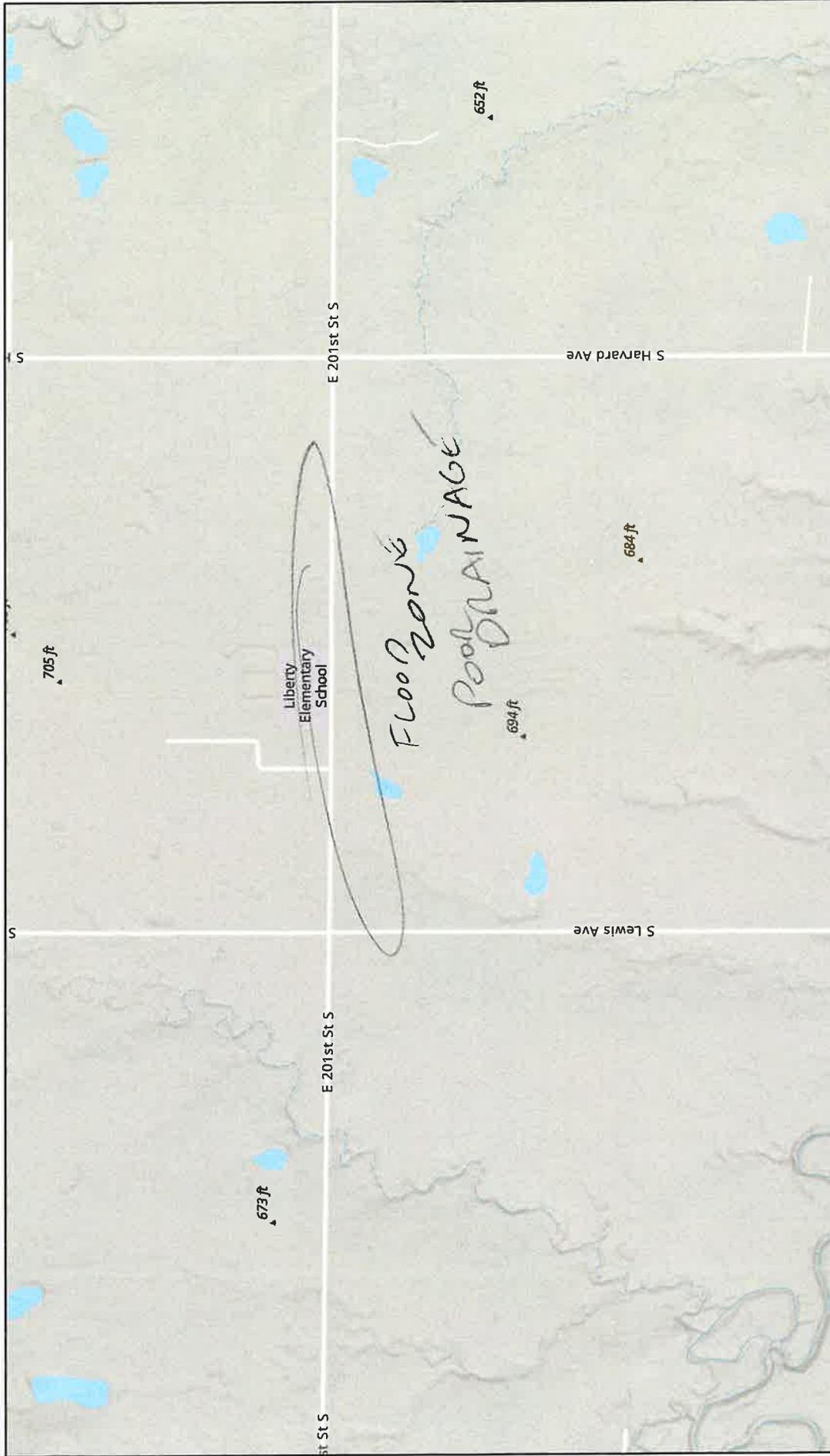




Liberty School, E 201st St S, Liberty, Tulsa County

Poor drainage causes flood to occur in front of school.

ArcGIS Web Map



4/11/2025, 2:00:52 PM

17d3a399972-layer-15

17d3a37c625-layer-13

1:18,056

0 0.13 0.25 0.5 mi

0 0.2 0.4 0.8 km

Esri, NASA, NGA, USGS, FEMA, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Okmulgee County, Lake Henryetta

Guard Rails



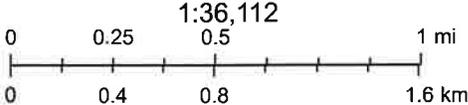


ArcGIS Web Map



4/9/2025, 2:43:35 PM

-  17d3a399972-layer-15
-  17d3a37c625-layer-13

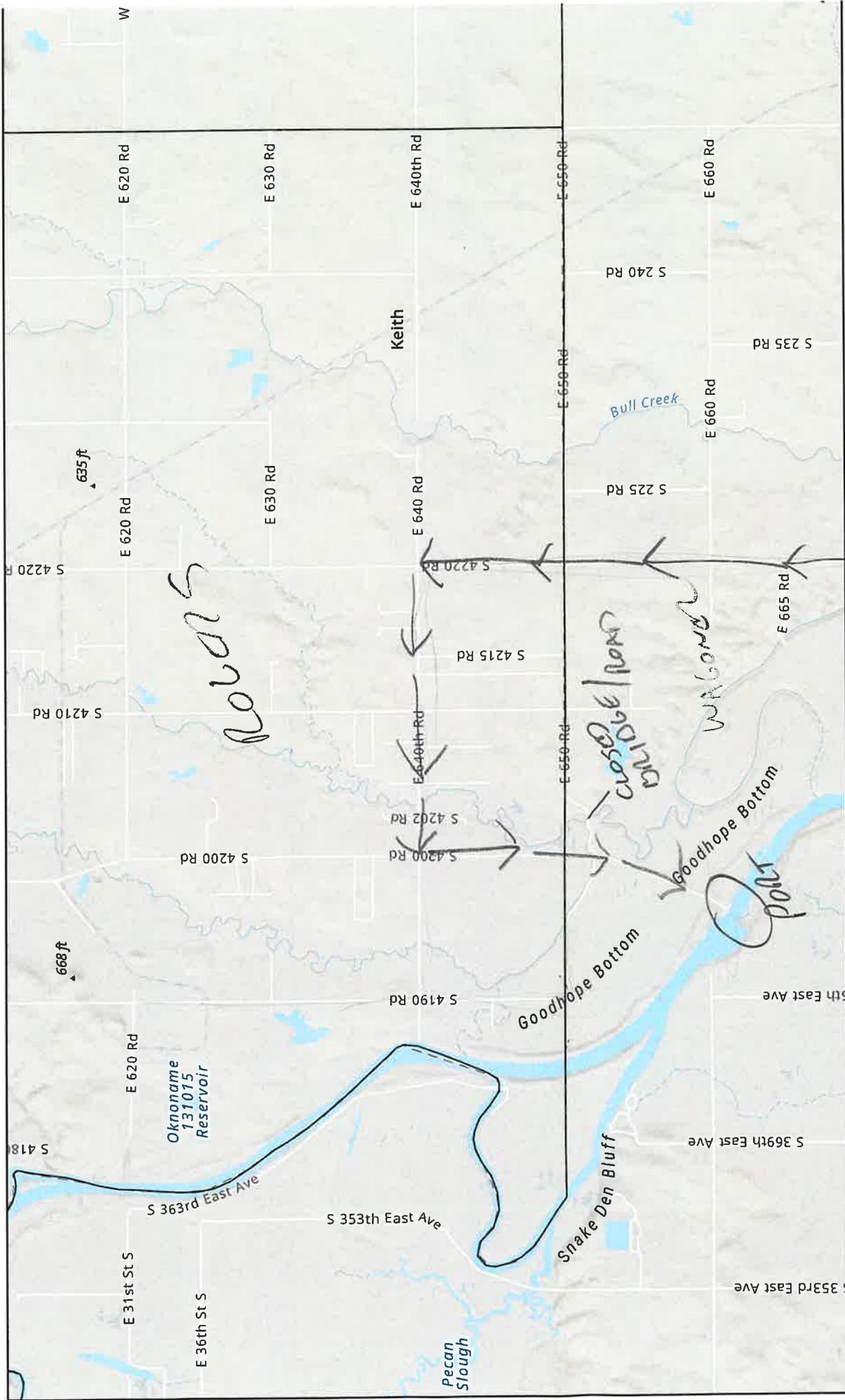


E 650 Rd, County line of Rogers and Wagoner County.

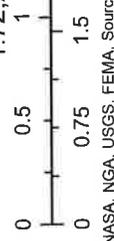
E 650 Rd is narrow, poor condition, and has a closed bridge that inhibits traffic to S4200 Rd.

The safety issue is truck traffic coming from the south on S 4220 Rd is crossing over on E 640 Rd to go to the port on S4200 Rd. There have been numerous accidents due to E 640th is narrow and high residential. Rogers county's solution is to open E650th to the port from S 4220 Rd. To accomplish this they need E 650th suitable for truck traffic and the closed bridge/road open from E 650th to the port on S 4200 Rd.

ArcGIS Web Map



1:72,224



Esri, NASA, NGA, USGS, FEMA, Sources: Esri, TomTom, Garmin, USGS, © OpenStreetMap contributors, and the GIS User Commun

4/11/2025, 8:10:07 AM

-  17d3a399972-layer-15
-  17d3a37c625-layer-13

current TRAFFIC

ArcGIS Web Map

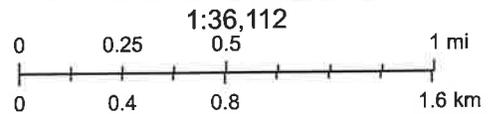


4/11/2025, 8:30:34 AM

Proposed TRAFFIC

17d3a399972-layer-15

17d3a37c625-layer-13



ArcGIS Web Map



4/11/2025, 8:27:52 AM

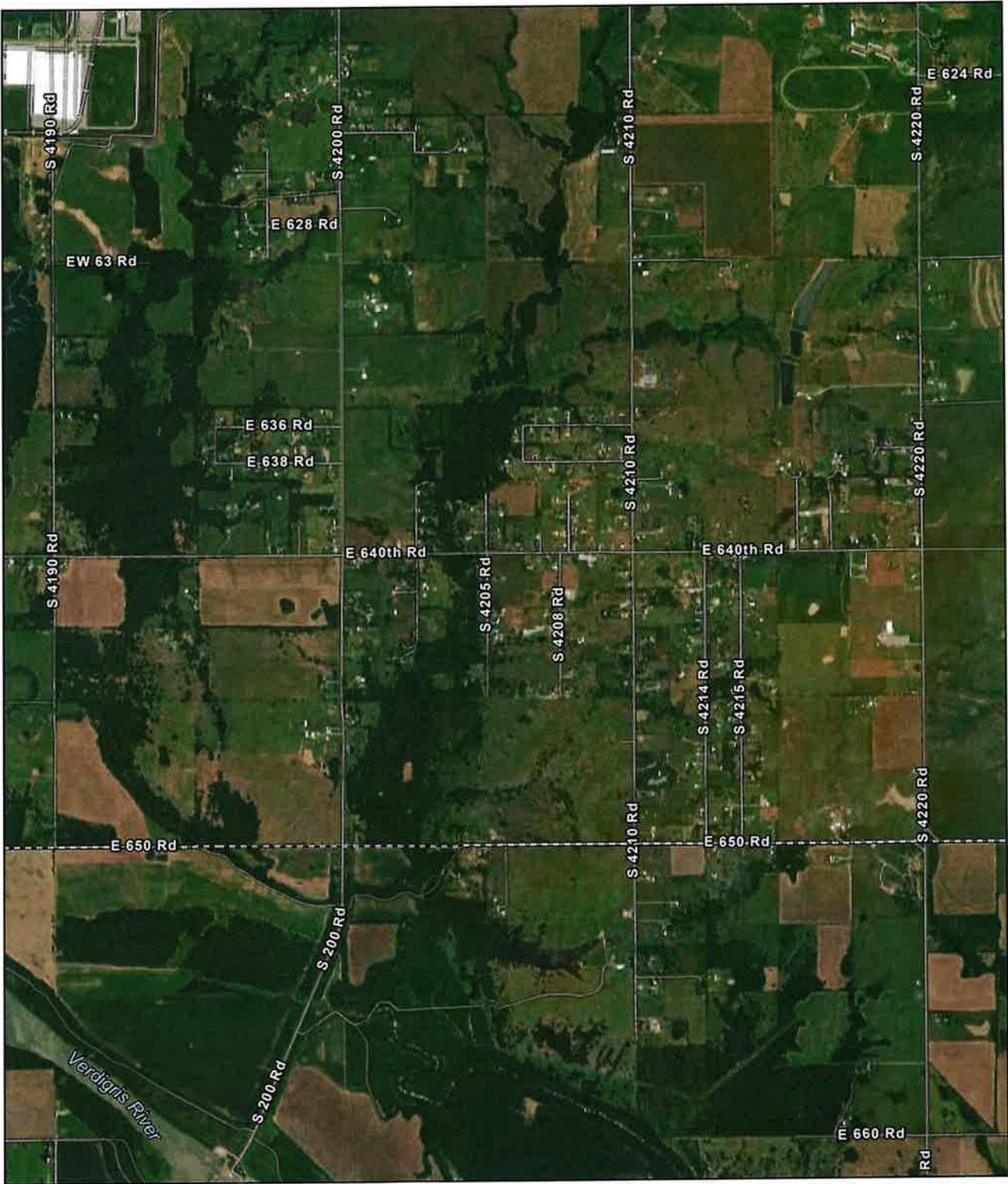
 17d3a399972-layer-15

1:9,028



Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OI contributors, and the GIS User Community, Maxar

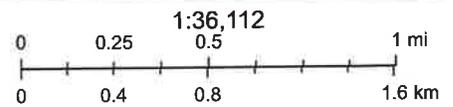
ArcGIS Web Map



4/11/2025, 8:29:53 AM

 17d3a399972-layer-15

 17d3a37c625-layer-13

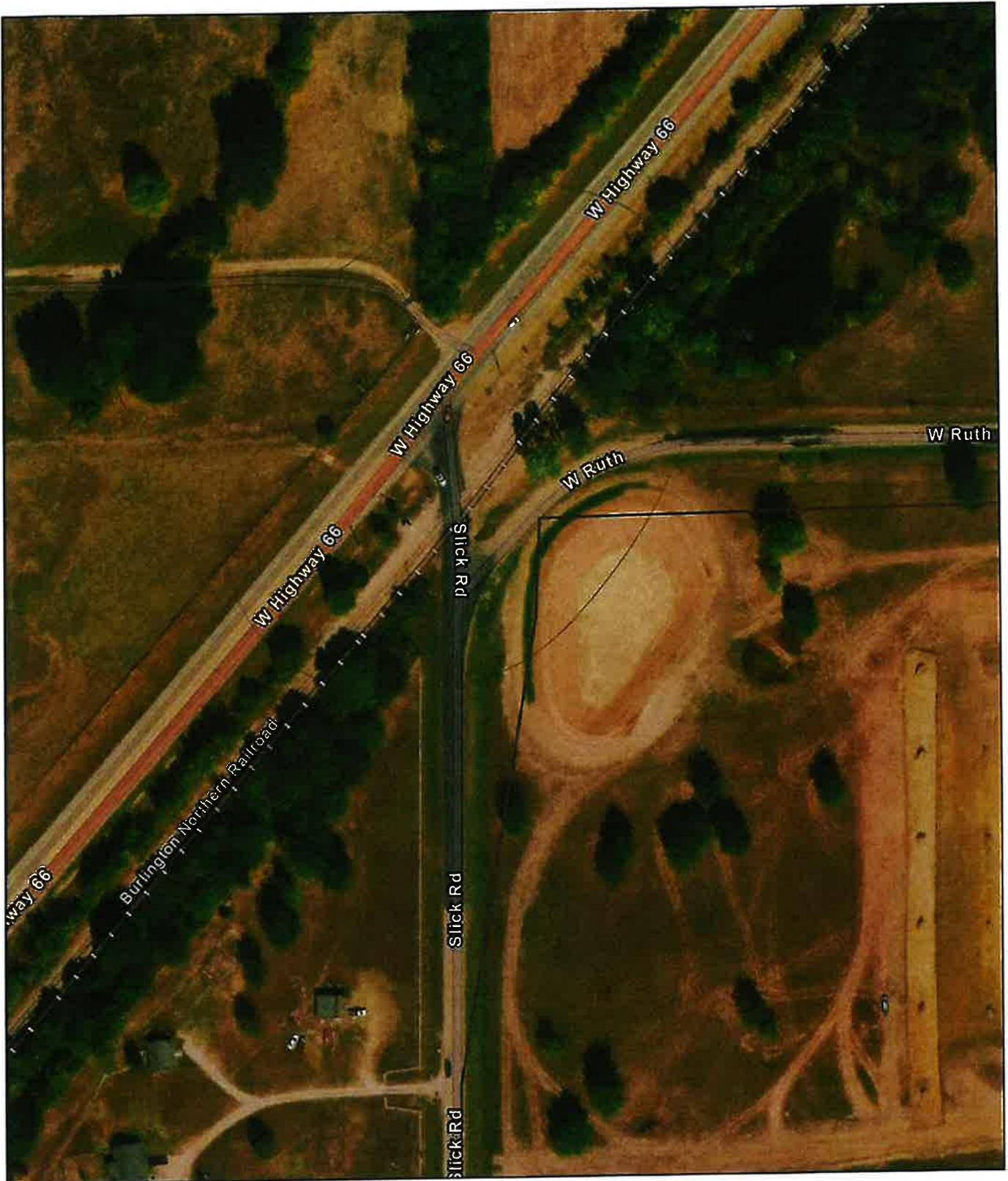


Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Maxar

Slick Rd/HWY 66 intersection, Kellyville, Creek County

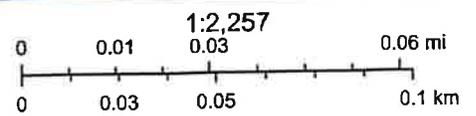
Blind intersection with railroad tracks.

ArcGIS Web Map



4/11/2025, 9:31:51 AM

- 18554604e90-layer-39
- 17d3a399972-layer-15





APPENDIX I

SS4A SAFETY ACTION PLAN REFERENCE DOCUMENT

Muscogee Creek Nation - SS4A Certification Reference Table

| Leadership Commitment and Goal Setting | | |
|---|--|--------|
| Chapter, Section | Text | Page # |
| Resolution | The Nation’s goal year of 2045 and accompanying fatal and serious injury crash percentage reduction goals of 20 percent by 2030, 50 percent by 2035, 75 percent by 2045. | 7 |
| Executive Summary | “The Plan was adopted and supported by Muscogee (Creek) Nation ... on May XX, 2025.” | 11 |

| Planning Structure | | |
|---------------------------|---|--------|
| Chapter, Section | Text | Page # |
| 2.4.1 | The Muscogee (Creek) Nation operates under a structured governance framework that empowers its government to manage, plan, and oversee key aspects of transportation infrastructure within its jurisdiction.” | 20 |
| 2.4.2 | “For the development of a SS4A Safety Action Plan and as part of the planning structure, the Muscogee (Creek) Nation DOT created a Project Oversight Team....” | 21 |

| Safety Analysis | | |
|------------------------|---|--------|
| Chapter, Section | Text | Page # |
| 3.2.1 | “According to the FHWA injury classification scale and definitions for Oklahoma, collisions are ranked on a severity scale of 1 to 5, categorized as follows....” | 22 |
| 3.2.3 | “Understanding the factors that contribute to crashes is crucial for identifying key safety concerns and implementing effective countermeasures.” | 26 |
| 5.1 | “To ensure a thorough evaluation of fairness, various datasets provided by USDOT were reviewed...” | 43 |

| Engagement and Collaboration | | |
|-------------------------------------|--|--------|
| Chapter, Section | Text | Page # |
| 4.1 | “An engagement plan was developed early in the process to outline target audiences and ways to hear from them. These groups were key to ensure issues regarding roadway safety from their perspectives were brought to life as people who drive, walk, bike or roll in Muscogee Creek Nation. The following groups were invited to participate in the planning process:” | 35 |

Muscogee Creek Nation - SS4A Certification Reference Table

| | | |
|-----|---|----|
| 4.2 | Public meetings: There were two rounds of meetings. The first round consisted of 12, in person, meetings held in October 2024. The second round consisted of 2 meetings in March 2025 that allowed attendees to join virtually or in person. | 37 |
| 4.1 | “Considering the vast geographic area of Muscogee (Creek) Nation four regions were identified in order to provide convenient access and increase participation. This also allowed the team to present data and analysis that were specific to each region and collect better feedback.” | 36 |
| 4.2 | “Engagement opportunities were made available from October 2024 to May 2025. These strategies included a project website, helpline, comment map, survey, and public meetings.” | 37 |
| 7.1 | Table 5 – Prioritization Criteria and MOE’s | 54 |

| Policy and Process Changes | | |
|----------------------------|---|--------|
| Chapter, Section | Text | Page # |
| 6.1 | “Relevant and existing Muscogee (Creek) Nation plans, policies, and procedures were collected and reviewed. For each plan, recommendations were documented...” | 50 |
| 6.2 | “Federal and Tribal plans that address transportation safety were collected and reviewed.” | 51 |
| 6.7 | “Various safety-related themes were prominent throughout many of the planning documents. It is recommended that each County within Muscogee Creek Nation review and adopt the Muscogee Creek Nation SS4A Safety Action Plan...” | 53 |

| Strategy and Project Selection | | |
|--------------------------------|--|--------|
| Chapter, Section | Text | Page # |
| 7.1 | “The process begins with a comprehensive screening and evaluation of roadway segments and intersections across the Nation’s transportation network.” | 54 |
| 7.1 | “Muscogee Creek Nation Oversight Team was used to score each location..... the list of evaluation criteria and associated Measures of Effectiveness (MOE) used to prioritize locations is shown in Table 5.” | 55 |
| 7.1 | “Two distinct analyses were conducted: one encompassing all users and another specifically focused on vulnerable road users (pedestrians and bicyclists).” | 55 |

Muscogee Creek Nation - SS4A Certification Reference Table

| Progress and Transparency | | |
|----------------------------------|---|--------|
| Chapter, Section | Text | Page # |
| 8.1 | “Several success factors have been identified below and are considered essential to ensuring adequate leadership and oversight, progress, and transparency...” | 63 |
| 8.1 | “To track the progress of the Safety Action Plan an oversight committee should be formed. This committee should meet quarterly... with the goal of ensuring progress in the implementation of all aspects of the plan...” | 64 |
| 8.6 | “Transparency and regular reporting ensure accountability and community engagement. Consider these measures...” | 66 |

| Action Plan Date | | |
|---|----------------|--------|
| Document | Date Finalized | Page # |
| MCN SS4A Comprehensive Safety Action Plan | TBD | All |



TR 25-069

CLASSIFICATION: #28. LANDS AND MINERALS

A TRIBAL RESOLUTION OF THE MUSCOGEE (CREEK) NATION APPROVING THE COMPREHENSIVE SAFETY ACTION PLAN

Be resolved by the National Council of the Muscogee (Creek) Nation:

WHEREAS, the Muscogee (Creek) Nation Department of Transportation (MCN DOT) received a planning grant from the U.S. Department of Transportation under the Safe Streets and Roads for All (SS4A) discretionary grant program, established by the Bipartisan Infrastructure Law (BIL), also known as the Infrastructure Investment and Jobs Act (IIJA); and

WHEREAS, the SS4A program supports Tribal, regional, and local efforts to develop and implement comprehensive safety action plans aimed at reducing roadway fatalities and serious injuries; and

WHEREAS, the MCN DOT has completed the Muscogee (Creek) Nation Safe Streets for All Comprehensive Safety Action Plan ("Plan") in accordance with SS4A program requirements; and

WHEREAS, the Plan includes all eight federally defined components necessary for future eligibility under the SS4A program: (1) Leadership Commitment and Goal Setting; (2) Planning Structure; (3) Safety Analysis; (4) Engagement and Collaboration; (5) Equity Considerations; (6) Policy and Process Changes; (7) Strategy and Project Selections; and (8) Progress and Transparency, and

WHEREAS, the Plan was formed by a five-year crash analysis (2017–2021), public and stakeholder engagement across four regions, and identification of a High Injury Network (HIN) to guide investment in safety improvements; and

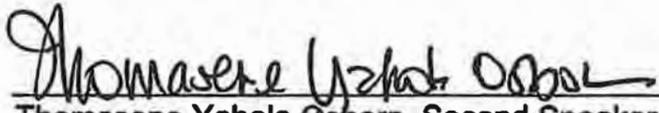
WHEREAS, the Muscogee (Creek) Nation, through its Department of Transportation, has established target crash reduction goals of twenty percent (20%) by 2030, fifty percent (50%) by 2035, and seventy-five percent (75%) by 2045, and affirms its commitment to implementing the Plan to meet these goals; and

WHEREAS, the safety and welfare of Muscogee (Creek) Nation citizens, employees, and visitors is of paramount concern.

NOW THEREFORE BE IT RESOLVED THAT, the Muscogee (Creek) Nation hereby approves and adopts the Safe Streets for All Comprehensive Safety Action Plan and authorizes the Department of Transportation to implement the Plan throughout the Muscogee (Creek) Nation Reservation in accordance with its terms and the SS4A grant requirements.

ENACTED by the Muscogee (Creek) National Council on this 23rd day of August, 2025.

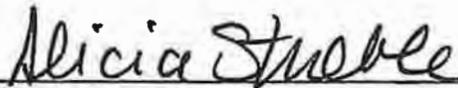
IN WITNESS WHEREOF, the Speaker of the Muscogee (Creek) National Council has hereto attached his signature.



Thomasene Yahola Osborn, Second Speaker
National Council
Muscogee (Creek) Nation

CERTIFICATION

I, the undersigned, certify that the foregoing is a true extract from the minutes of the Muscogee (Creek) National Council comprised of Sixteen members with Fourteen members attending this meeting on the 23rd day of August, 2025 and that the above is in conformity with the provisions therein adopted by a vote of 13 in favor, 0 against and that said Resolution has not been rescinded or amended in any way and the above is the signature of the Speaker of the National Council.



Alicia Stroble, Recording Secretary
Muscogee (Creek) National Council

APPROVAL

I, the Principal Chief of the Muscogee (Creek) Nation, hereby affix my signature this 29th day of August, 2025 to the above Resolution, TR 25-069 authorizing it to become a Resolution under Article VI., Section VI., of the Constitution of the Muscogee (Creek) Nation.



David W. Hill, Principal Chief
Muscogee (Creek) Nation

