Kent County, County-wide Deer Management Recommendations

Report for the Kent County Deer Management Coalition

R. Larson[1], A. Locher[1,2], B. Glei[1,2], A. Buday[3]

Grand Valley State University
[1]Natural Resource & Environmental Management
[2]Wildlife Biology
[3]Sociology

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EXECUTIVE SUMMARY

The role of Grand Valley State University was to assist the Kent County Deer Management Coalition with data-driven management recommendations for addressing public concerns regarding white-tailed deer in Kent County. Data sources Data sources included deer-vehicle collision analyses, habitat assessment, deer abundance surveys through spotlighting, and public perception data collected through surveys and open houses.

In Kent County, highest deer-vehicle collision areas include I-96, US-131, and M-44. Collision rates increase on dry roads with speed limits over 60 mph. Peak collision times are dawn and dusk, with November having the highest accident rates. In 2024, road-killed deer numbers (4,290) exceeded the number of hunter-harvested deer (4,140).

Deer habitat suitability is highest in areas north and east of Grand Rapids, with patches in Walker, Kentwood, and townships southeast of Grand Rapids. The interspersion of forests and agriculture in those areas provide food while wetlands and conifers offer protective cover. Urban areas that are largely impervious do not provide deer life requisites, although deer may pass through them to access better habitat.

Deer density estimates from 4 seasonal spotlight surveys ranged from 0 deer per square mile in downtown areas to estimates exceeding 150 per square mile in concentrated areas near Kentwood, southwestern Cascade Township, Nelson Township, Caledonia Township, Vergennes Township, and northeastern Plainfield Township near Rockford. Deer distribution varies throughout the year due to changes in seasonal resource availability social behavior. Deer populations are considered “too high” when disease is prevalent, forest regeneration suffers, and residents report intolerable conflicts such as landscaping damage, deer-vehicle collisions, or others. Two-thirds of Kent County residents (66.6%) reported that the deer population has increased over the past three years, and 57% felt there are too many deer around their home, correlating with high deer density areas.

Nearly 6,670 Kent County residents (1% of the county) participated in the 2024 public survey about opinions and concerns regarding deer. Forty-seven percent reported seeing deer daily or multiple times per day. Only 3% of respondents said they never see deer. Two-thirds (66.6%) believed that the deer population has increased over the past three years. Approximately 30% of respondents said they “enjoy deer,” and 42% said they “enjoy deer but have some concerns,” compared with 24% who regarded deer as a “nuisance.” Deer-vehicle collisions stood out as one of the most common and consequential issues identified by 81% of the respondents. Concerns about damage to landscaping, and ticks and disease were also notable across the county. These opinions varied across municipalities; the City of Cedar Springs, Solon Township, and Tyrone Township stood out

as areas where deer were generally enjoyed, whereas Courtland Township – and to a lesser extent Ada, Cascade, and East Grand Rapids – showed higher levels of nuisance perception. Across much of the county, moderate concern was the most common stance, suggesting broad ambivalence rather than sharp polarization. Urban and suburban areas such as Grand Rapids, Kentwood, and Wyoming, tended to lean more toward concern or nuisance, whereas rural, northern townships were more likely to express enjoyment.

Proposed management recommendations aim to reduce human-deer conflicts, maintain a healthy deer population, and support ecological processes such as forest regeneration. They should be used in an adaptive framework whereby recommendations are actively monitored and modified as new data are gathered and analyzed. Six deer management units (DMUs) were delineated based on statistical groupings of environmental characteristics, deer densities, vehicle traffic, and public perceptions. Each DMU was assigned a specific recommended prescription for deer management appropriate for the habitat, deer abundance, and social perspectives unique to it. Although specific prescriptions are recommended for each DMU, to be effective, management must occur county-wide across all DMUs. Recommendations include urban archery hunting, localized deer reduction with ethical utilization, facilitating hunter recruitment and access to land, habitat management, roadside mowing cycle implementation, native landscaping planting, establishing and enforcing deer feeding bans, monitoring public perceptions of deer, and developing strategic plans for deer management.

The initial county-wide management goal is to reduce the number of deer-vehicle collisions by at least 1050 collisions (comparable to the 2021 collision number) within the next 2 years by increasing the number of hunter-harvested deer by at least 1900 each year. With this goal, deer mortality rates through ethically-harvested and utilized deer would be compensatory to mortality from deer-vehicle collisions. In essence, the cause of deer mortality would be shifted from collisions to harvest.

Successful urban deer management is not a one-size-fits-all, short-term solution. It needs cooperation, communication, leadership, research-based adaptive management and long-term vision. Management recommendations should be implemented, monitored, and measured over the next 3 years to facilitate adaptive management. Deer population management and roadside mowing should be implemented the first year (2026). Local deer reduction with ethical utilization, monitoring public sentiments, and monitoring of deer-vehicle collisions should be conducted during the second year (2027). In 2028, cumulative results should be evaluated and used to develop a new strategic plan for 2029-2034 among all DMUs.

INTRODUCTION

The role of Grand Valley State University was to assist the Kent County Deer Management Coalition in addressing public concerns regarding white-tailed deer (*Odocoileus virginianus*) in Kent County. The process leading up to the recommendations was entirely data driven, whereby data were acquired through a public opinion survey in November – December 2024, public open houses in June 2025, correspondence via the Coalition's email (deer@kentcountymi.gov), 4 seasonal deer population spotlight surveys conducted between December 2024 and August 2025, and spatial analyses of deer vehicle collisions and other environmental data. The following recommendations focus on actions that can be implemented to reduce human-deer conflicts, maintain a healthy deer herd, and maintain natural ecosystem processes such as forest regeneration. Spotlight surveys were conducted by Grand Valley State University in accordance to local lows and with written consent from the Michigan Department of Natural Resources – Law Enforcement Division and Wildlife Division.

The goal of this project, conducted in partnership with the Kent County Deer Management Coalition, is to implement adaptive management strategies to reduce the number and severity of deer-human conflicts and maintain healthy natural ecosystems within Kent County. Management recommendations involve a combination of deer population management, habitat management, and an understanding that deer-human conflicts are a direct result of human-caused alterations in the natural landscape. To be effective, management must include aspects of all 3 components:

> *Deer population management*: managing numbers of individuals with the aim of maintaining balance among the population, natural ecosystems, and human acceptance.
>
> *Habitat management*: altering vegetation composition and structure to change the availability of food, water, or cover for deer.
>
> *Human dimensions*: understanding the public perceptions regarding deer, incorporating viewpoints into management practices, and clearly communicating information.

DATA SUMMARY

The following summarizes data collected and analyzed between November 2024 and October 2025. These data were important to understand the location and magnitude of deer-vehicle collisions in Kent County, distribution and quality of deer habitat, distribution and abundance of deer within the county, and public perceptions of deer within the county. All data were used to form empirically based management recommendations.

Deer-Vehicle Collisions

Several factors contribute to wildlife-vehicle collisions (WVC) involving deer. Identifying these factors is essential for developing strategies to reduce WVC in Kent County. The highest number of collisions in Kent County occur along I-96, US-131 and M-44 north of Grand Rapids, the northwest intersection of US-131/M-6, and the intersection of M-6/M-37 (Figure 1). Collision data show two peak periods at dawn and dusk, with low-light conditions contributing to increased incidents (Figure 2; Abeyrathna et al. 2021, Roy & Ksaibati 2021, Laflamme et al. 2024). Accident rates in Kent County were highest in November (Figure 3). Most WVCs occurred under clear weather conditions. Analysis of speed limits indicated that crash rates increased when the posted limit exceeded 60 mph (Roy & Ksaibati 2021). Additionally, car/deer crash rates were higher on dry road surfaces (Figure 4). The trends with deer-vehicle collisions in Kent County are consistent with those in different geographic areas (Roy & Ksaibati 2021).

The number of deer killed by vehicle collisions exceeded the number of hunter-harvested deer in 2024. Road-killed deer cannot be utilized; they are brought to the landfill for disposal by the Kent County Road Commission. An analysis of trends between 2021 – 2024 revealed a decrease in hunter-harvested deer from over 6000 in 2021 to 4140 in 2024 (according to the Michigan DNR Mandatory Reporting results; MDNR 2025). The number of road-killed deer pickups steadily increased from 3243 in 2021 to 4290 in 2024 (Figure 5).

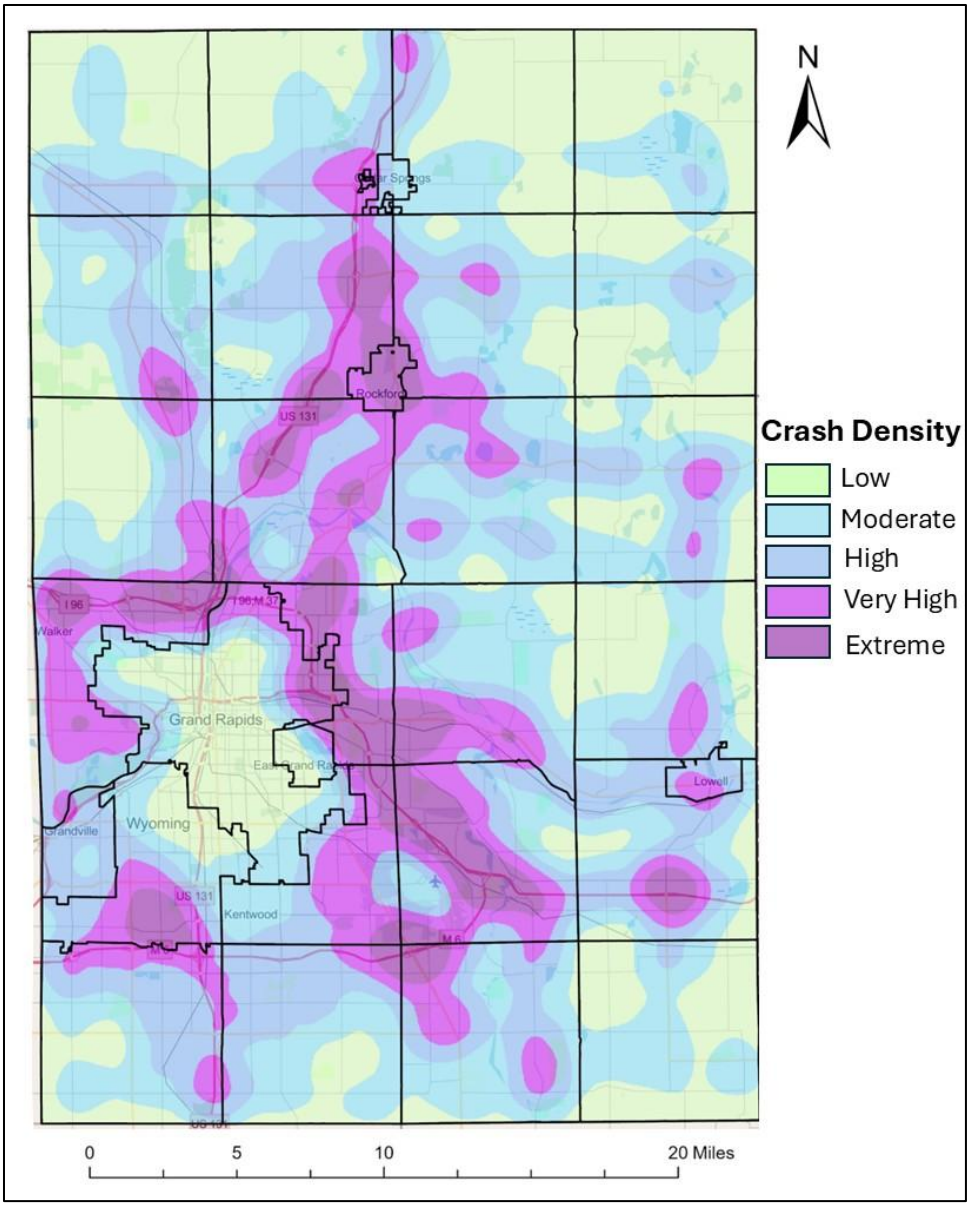

Figure 1. Distribution of crash densities in Kent County calculated from crash data reported between 2021–2023 (Michigan State Police UD-10 Car Accident Database).

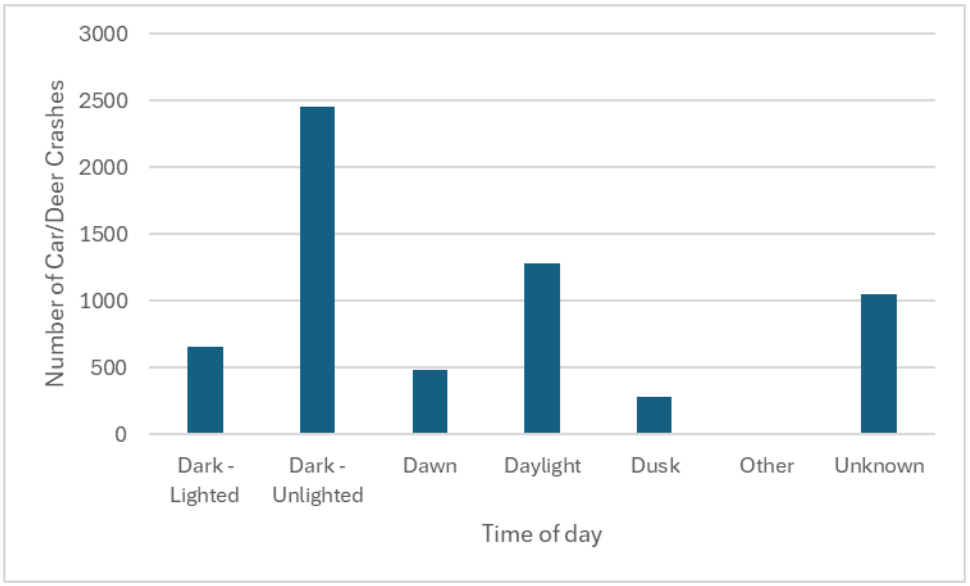

Figure 2. Total number of car/deer crashes by time of day in Kent County, 2021–2023. (Michigan State Police UD-10 Car Accident Database)

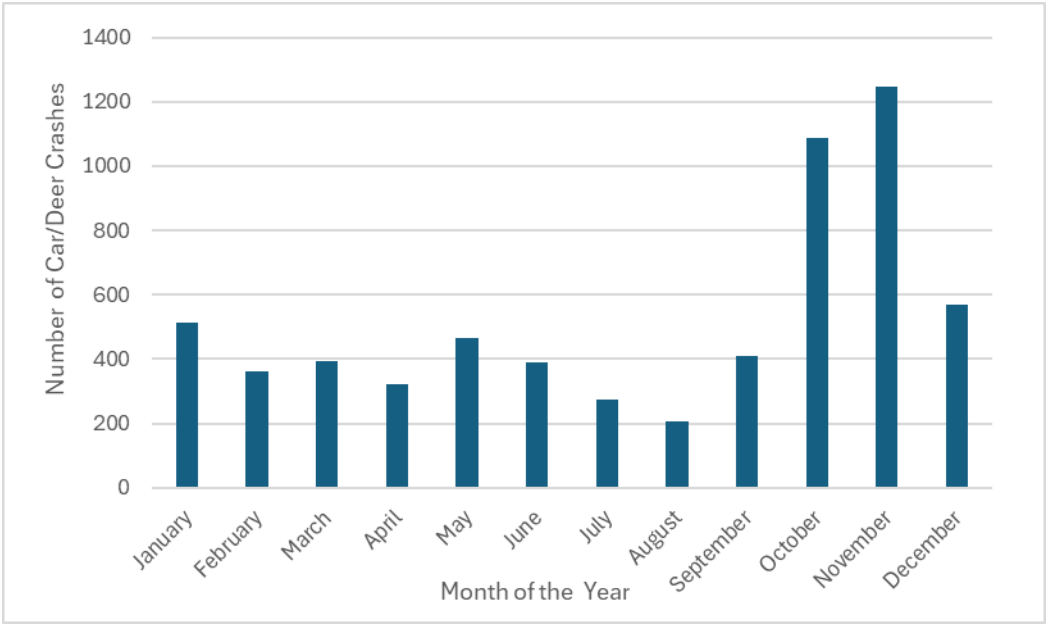

Figure 3. Total number of car/deer crashes by month of the year in Kent County, 2021–2023. (Michigan State Police UD-10 Car Accident Database)

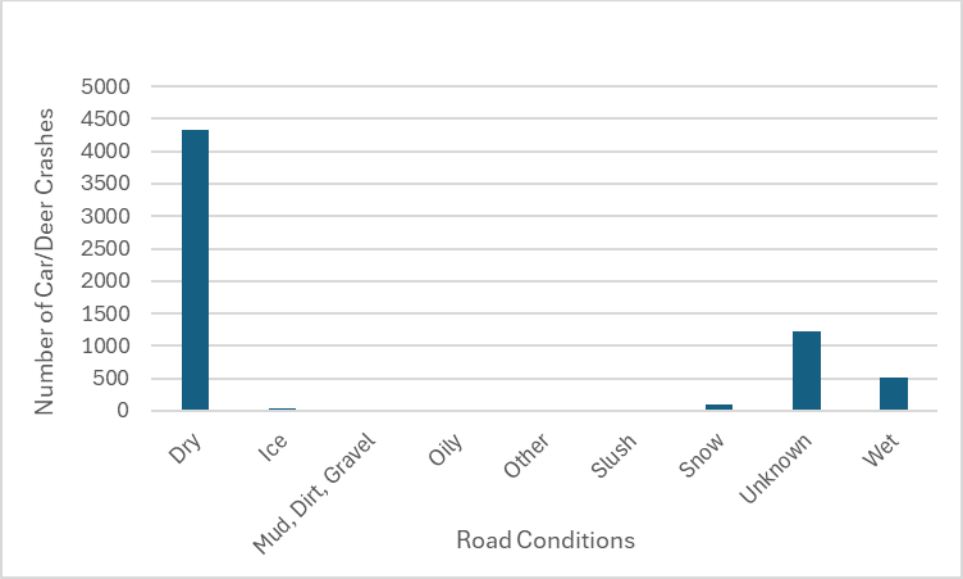

Figure 4. Total number of car/deer crashes by road conditions in Kent County, 2021–2023. (Michigan State Police UD-10 Car Accident Database)

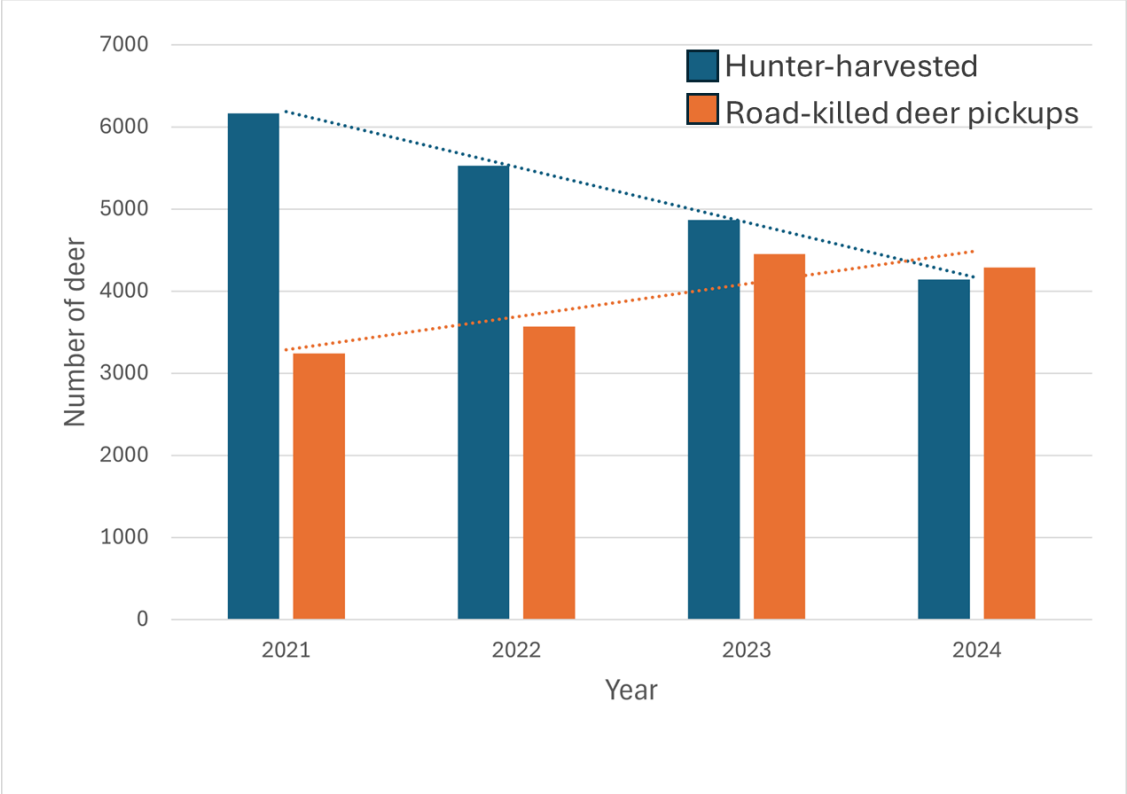

Figure 5. Number of road-killed deer pickups in 2024 exceeded the number of hunter-harvested deer in Kent County.

Deer Habitat Suitability

Habitat suitability assessments are frequently used in wildlife management to identify characteristics of areas that are selected by wildlife (Morrison et al. 2006). High habitat suitability provides adequate food, cover, and areas for reproduction, and deer tend to move within habitat corridors to seek high-quality habitat. For deer, forested and agricultural areas provide food whereas conifer forests and wetlands provide cover. Areas that are largely impervious do not provide life requisites for deer, although deer may pass through them to access better habitat (Locher et al. 2014).

In Kent County, areas with generally higher habitat suitability occur north and east of Grand Rapids, with some patches of suitable habitat in Walker, Kentwood, and townships southeast of Grand Rapids (Figure 6).

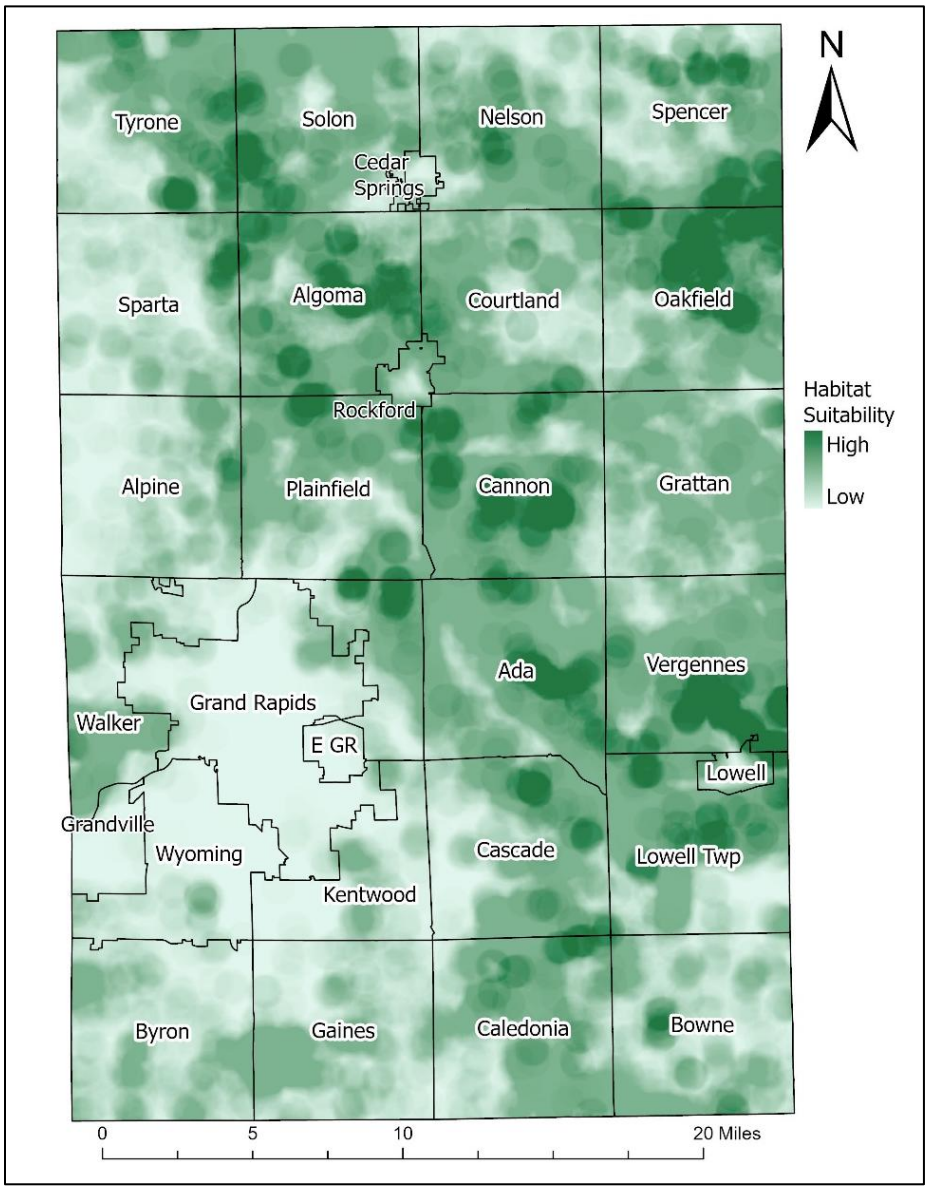

Figure 6. Habitat suitability for white-tailed deer within Kent County.

Deer Distribution and Abundance

Deer population size is a function of survival rate, influenced by habitat quality, natural predation, disease, hunting pressure, and other environmental conditions such as winter severity or mortality from vehicle collisions (Halls 1984). The Michigan Department of Natural Resources estimated around 2 million deer in the state of Michigan, with highest densities in southern lower Michigan where mild winters and abundance of food from agriculture promote survival and population growth (Halls 1984). Deer populations are considered "too high" when disease is prevalent, forest regeneration suffers, and residents report intolerable conflicts such as landscaping damage, deer-vehicle collisions, or others (Rudolph et al. 2011). Two-thirds of Kent County residents (66.6%) reported that the deer population has increased over the past three years, and 57% felt there are too many deer around their home.

It is difficult to estimate deer population density, as deer range widely seasonally and annually, and are not evenly distributed in landscapes. Although deer distribution varies slightly across seasons, spotlight surveys reveal areas that average consistently higher relative deer densities throughout the year (Figure 7). Spotlight surveys conducted in December 2024, and February, May, and August 2025 revealed a snapshot of deer abundance throughout the county within different seasons (Figure 8). Deer density estimates ranged from 0 in downtown areas to estimates exceeding 150 deer per square mile in concentrated areas near Kentwood, southwestern Cascade Township, Nelson Township, Caledonia Township, Vergennes Township, and northeastern Plainfield Township near Rockford. Estimates from May spotlight surveys revealed relatively lower densities, while estimates in August revealed relatively higher densities (Figure 8). This pattern is not surprising, given that in May, population size may decline due to winter mortality, and also because deer disperse and separate from their social groups during spring to drop their fawns in secluded areas with adequate hiding cover (Halls 1984). These areas tend to be forested edges, fields with grassy cover, or areas with thick underbrush. In August, density estimates were higher because fawn survival throughout the summer increases population size prior to hunting season.

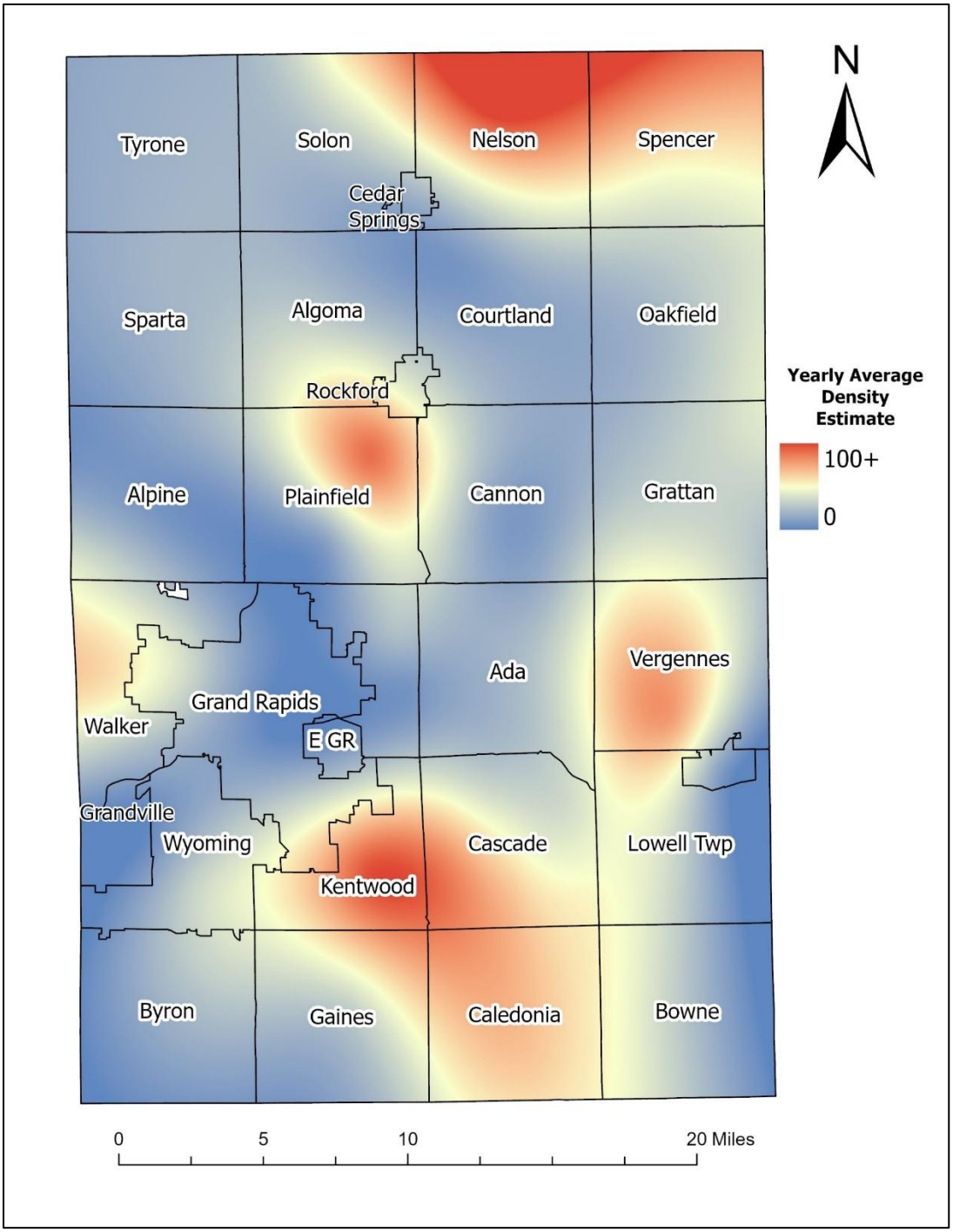

Figure 7. Yearly average white-tailed deer density estimates in Kent County based on spotlight surveys conducted within all jurisdictions in November 2024, and February, May, and August 2025.

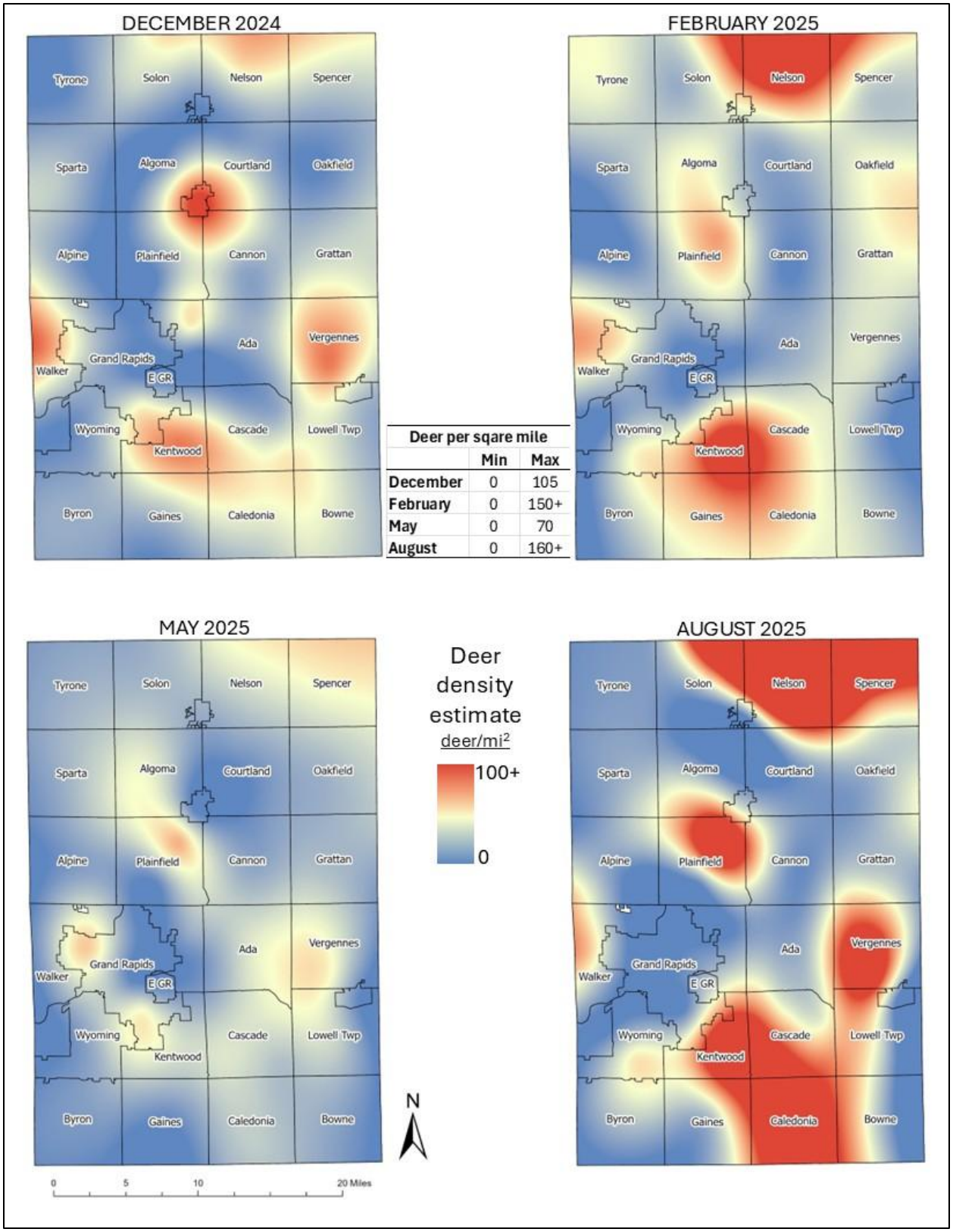

Figure 8. Seasonal white-tailed deer density estimates in Kent County based on spotlight surveys conducted within all jurisdictions in November 2024, and February, May, and August 2025.

Public Perceptions

To understand residents' experiences of and opinions about deer in Kent County, a survey of residents was conducted by Grand Valley State University in November – December 2024. This survey was developed using the Survey123 Application in ArcGIS Online and distributed through social media and news media outlets via url or QR code (see Appendix 1 for detailed methods.)

In total 6,667 Kent County residents responded to the survey (1.01% of the total Kent County population). Survey respondents reported seeing deer regularly, with nearly half (47%) indicating that they see deer daily or multiple times per day. Only 3% of respondents said they never see deer. Two-thirds (66.6%) believed that the deer population has increased over the past three years. Approximately 30% of respondents said they "enjoy deer," and 42% said they "enjoy deer but have some concerns," compared with 24% who regarded deer as a "nuisance."

These opinions varied across municipalities (Figure 9). The City of Cedar Springs, Solon Township, and Tyrone Township stood out as areas where deer were generally enjoyed, whereas Courtland Township – and to a lesser extent Ada, Cascade, and East Grand Rapids – showed higher levels of nuisance perception. Across much of the county, moderate concern was the most common stance, suggesting broad ambivalence rather than sharp polarization. Urban and suburban areas such as Grand Rapids, Kentwood, and Wyoming, tended to lean more toward concern or nuisance, whereas rural, northern townships were more likely to express enjoyment.

Respondents were also asked about specific concerns they may have regarding deer impacts, selecting "yes" or "no" from a list that included: deer-vehicle collisions, ticks and disease, landscaping, aggressive deer, native ecosystem damage, and deer health (Figure 10). There was widespread agreement that deer-vehicle collisions are a concern in Kent County, with 81% of respondents indicating that this is a concern for them. Concerns about damage to landscaping, and ticks and disease were also notable across the county.

Residents' concerns about deer vary based on their feelings about seeing deer (Figure 11) Among those who enjoy seeing deer, concerns more often center on deer health and deer-vehicle collisions. Some of these feelings reflect care for animal welfare and safety rather than direct conflict. In contrast, respondents who view deer as a nuisance are more likely to cite concerns about aggressive deer behavior, landscaping damage, and impacts on native ecosystems. Across most categories, those who enjoy deer but have some concerns make up the largest share of respondents, suggesting that many residents hold mixed views: deer are valued as part of the local environment while also presenting challenges.

Among these challenges, deer-vehicle collisions stand out as one of the most common and consequential issues identified by residents.

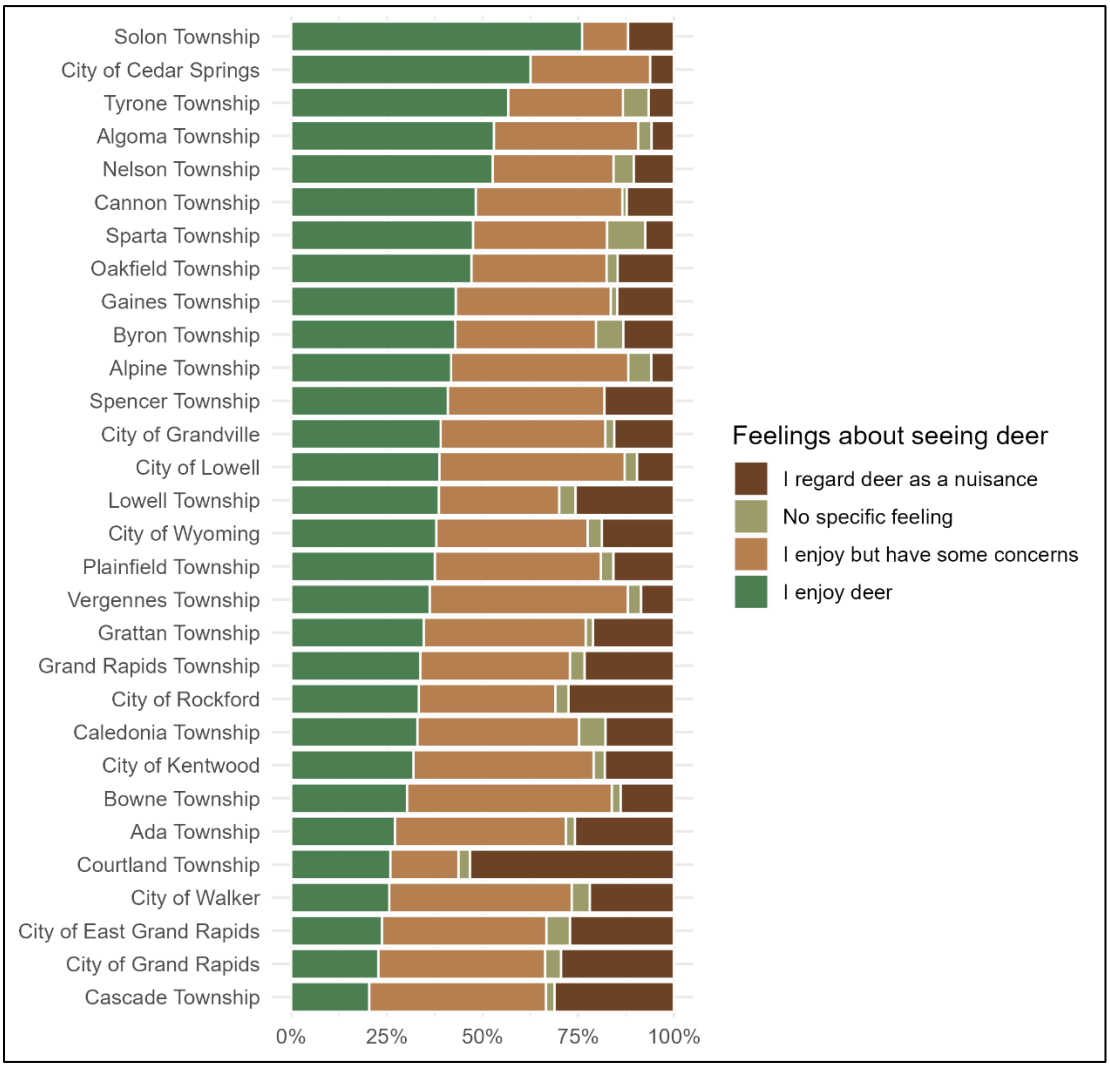

Figure 9. Kent County residents' feelings about seeing deer based on a public-opinion survey conducted by Grand Valley State University in November – December, 2024.

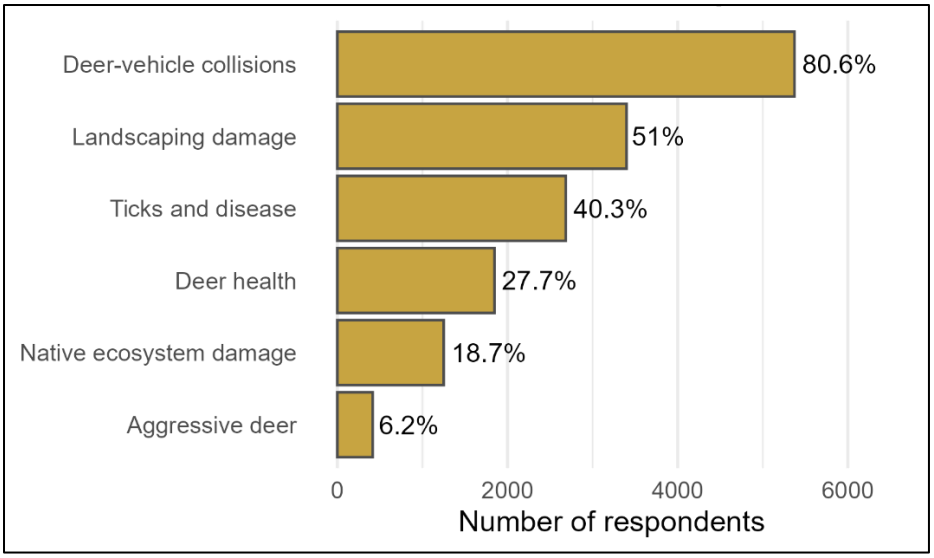

Figure 10. Kent County residents' concerns about white-tailed deer based on a public-opinion survey conducted by Grand Valley State University in November – December, 2024.

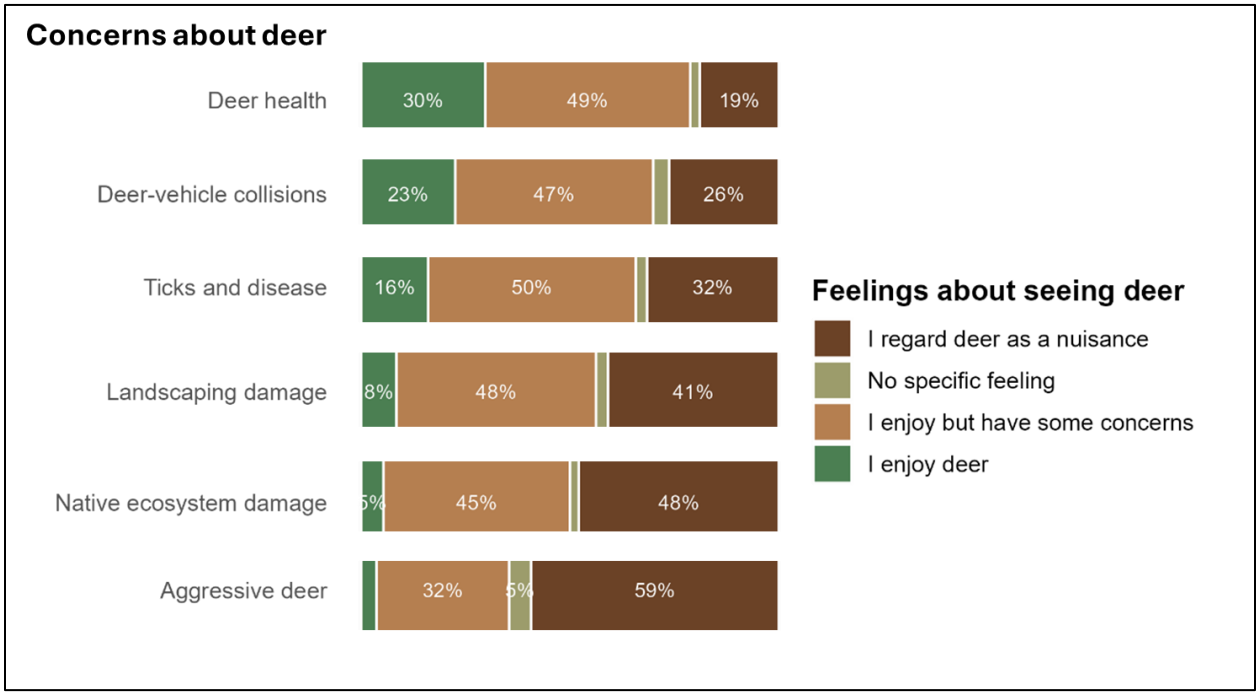

Figure 11. Relationship between Kent County residents' feelings about seeing white-tailed deer and their concerns based on a public-opinion survey conducted by Grand Valley State University in November – December, 2024.

While all of Kent County minor civil divisions were represented in the data, response rates varied considerably across locations. Margin of error (MOE) estimates reported in Appendix 1 compare the number of survey responses to Census Bureau population estimates for each location, providing an indication of how precisely the survey results reflect the views of residents within each jurisdiction. Municipalities with smaller MOE values (e.g., less than 7) have more precise estimates, while those with larger MOE values should be interpreted more cautiously as the true values may fall within a wider range around the reported estimate.

County-wide 57% of the total respondents reported seeing too many deer around their homes. Within 8 jurisdictions (Cascade, Courtland, East Grand Rapids, Grand Rapids, Kentwood, Rockford, Walker, Wyoming) the low estimate based on the margin of error still revealed a clear majority of residents who perceived too many deer around their homes. These jurisdictions align spatially with areas of high deer densities, deer-vehicle collisions, and relatively higher quality habitat (Figure 12). Within landscapes, deer tend to move from lower habitat suitability to higher habitat suitability. In such areas where there is more movement, the likelihood of deer-vehicle collisions increase, especially in high-traffic areas along the I-96 and US-131 corridors. The City of Kentwood, the City of Rockford, the City of Walker, the City of Wyoming Cascade Township, the western and southern areas of Courtland Township all have higher deer densities, better habitat, and extreme levels of deer-vehicle collisions as well as a clear majority of residents reporting too many deer around their homes (Figure 12). Although Grand Rapids and the City of Grandville have lower estimated deer abundance and relatively lower habitat quality, high levels of deer-vehicle collisions occur within and around the outer boundaries of the cities where residents report seeing too many deer around their homes (Figure 12).

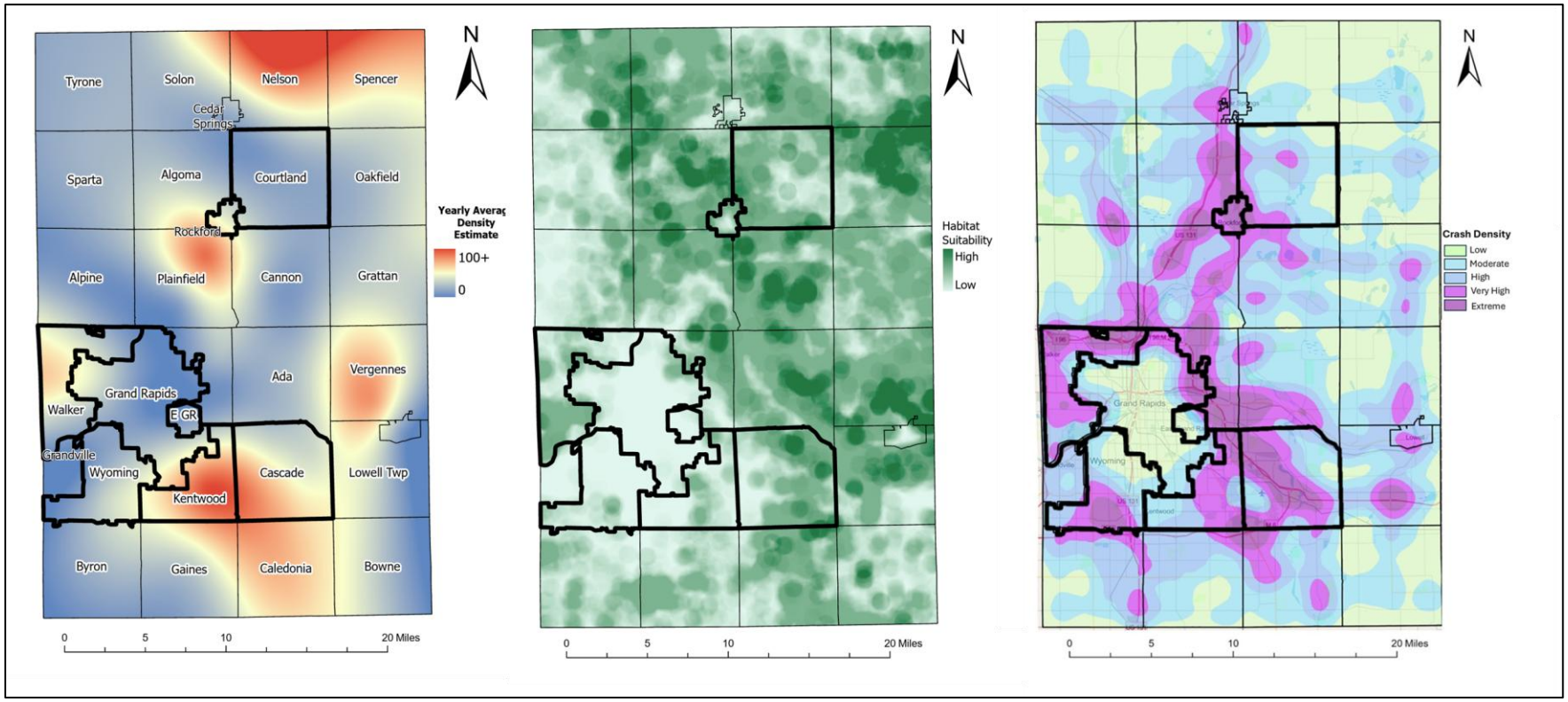

Figure 12. Relationship between white-tailed deer density estimates based on spotlight surveys conducted seasonally between November 2024 and August 2025, habitat suitability, and deer-vehicle collision based on Michigan state police reports between 2021 – 2024. Jurisdictions outlined in bold have a clear majority of residents who perceived too many deer around their homes. This result was based on responses to a public-opinion survey conducted by Grand Valley State University in November – December 2024.

PROPOSED MANAGEMENT RECOMMENDATIONS

The following management recommendations should be used in an adaptive framework. Adaptive management is a process whereby recommendations are formed after data analysis and are actively monitored and modified as new data are gathered and analyzed.

Proposed Deer Management Units

Deer management units (DMUs) were delineated within Kent County based on statistical groupings of environmental characteristics (deer habitat suitability, amount of agriculture/forest/impervious surfaces), deer densities, vehicle traffic, and public perception of deer (Figure 13, Table 1). For holistic management within Kent County, each DMU will have a specific recommended prescription for deer management appropriate for the habitat, deer abundance, and social perspectives unique to it.

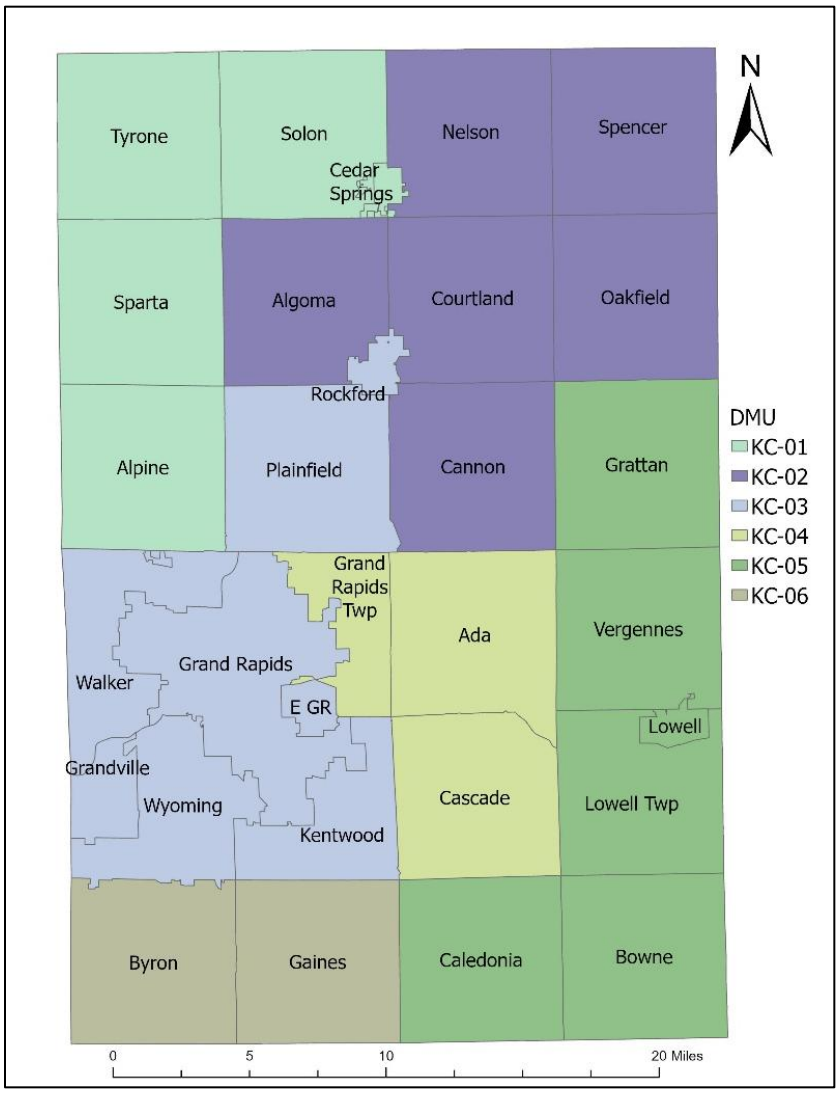

Figure 13. Recommended deer management units (DMUs) in Kent County.

Table 1. Descriptions of recommended deer management units (DMUs) in Kent County.

DMU	Geographic description	Civil Division	General Description of DMU
KC - 01	Northwestern area	Alpine Twp Cedar Springs Solon Twp Sparta Twp Tyrone Twp	Orchards and agriculture; residents generally enjoy deer and have relatively fewer concerns; low levels of public input
KC - 02	Northeastern area	Algoma Twp Cannon Twp Courtland Twp Nelson Twp Oakfield Twp Spencer Twp	Relatively good natural deer habitat quality; corridor for deer movement; chronic wasting disease present
KC - 03	West-central area	East Grand Rapids Grand Rapids Grandville Kentwood Plainfield Rockford Walker Wyoming	Largely developed and impervious surfaces, high-traffic urban areas surrounded by neighborhoods; relatively poor natural deer habitat quality; residents generally less tolerant of deer
KC - 04	Central area of county	Ada Twp Cascade Twp Grand Rapids Twp	Moderately developed; relatively poor habitat quality interspersed with higher-quality green space; area of likely high deer movement; core area of epizootic hemorrhagic disease
KC - 05	East and southeastern area	Bowne Twp Caledonia Twp Grattan Twp Lowell Lowell Twp Vergennes Twp	Relatively high-quality deer habitat; relatively high deer densities; residents generally enjoy seeing deer, but express some concerns
KC - 06	Southwestern corner	Byron Twp Gaines Twp	Moderate quality habitat; moderate deer densities; residents generally enjoy deer but have a few concerns

Proposed Population Management Recommendations

Abundance data based on spotlight surveys, combined with public perception of deer abundance suggests that focused deer population management efforts should occur in specific DMUs. These recommendations describe actions that a municipality could implement. DMU-specific prescriptions are described later in this document.

1. Urban Archery Hunting

Urban-archery programs emphasize regulated archery-based population control, safety protocols, public engagement, adaptive management, and interagency coordination.

Objectives of urban archery hunts include:

1) Reduce deer-vehicle collisions.
2) Reduce browsing and landscape damage.
3) Provide safe, ethical recreational hunting opportunities.
4) Increase community awareness and engagement in wildlife management.

Rationale for Urban Archery Hunts:

Ecological – High deer densities exert heavy browsing pressure on vegetation, including residential landscaping as well as native vegetation in intermittent woodlots, parks, and green spaces in urban/suburban areas (Hygnstrom 2011, Fairfax County Government 2025).

Public Safety – Suburban expansion increases deer movement through residential corridors, and concentrates deer in intermittent woodlots, parks, and greenspaces. Increased deer movement, especially in areas with high traffic volume, increases the risk of deer-vehicle collisions. Implementing targeted archery hunts within city and township limits is one of the most effective tools for reducing deer–vehicle collisions without the noise, range, or safety concerns associated with firearms (Fairfax County Government, 2025).

Economic and Community Benefits – Unchecked deer populations contribute to millions of dollars in economic losses through vehicle damage, agricultural impacts, and landscape destruction (MDNR 2020). Evidence from municipalities such as Meridian Township, Michigan and Peachtree City, Georgia have reported that structured volunteer archery programs not only mitigate these losses but also provide community benefits through venison donation programs and increased civil engagement in wildlife management.

Ethical and Administrative Framework – Urban hunting programs are designed around safety, ethics, and community transparency. Archery-based population management aligns with the North American Model of Wildlife Conservation by ensuring science-based, publicly accountable decision-making (Organ et al. 2012). Municipal programs require proficiency testing, background checks, and adherence to strict distance and equipment rules, ensuring that ethical harvests occur under safe, controlled conditions (Fairfax County Government, 2025; Charter Township of Meridian n.d.).

Urban Archery Hunting Recommendations

i. Participation

- Hunters participate by volunteering or through a lottery system.
- Hunters must be licensed, pass safety and proficiency tests, and follow local ordinances.
- Public and private parcel hunting availability is coordinated under local government supervision.

ii. Safety, Liability, and Risk Management

- Elevated shots only (no ground blinds).
- Maps must be created and provided to hunters and residents indicating no-shot zones and depicting minimum distance buffers from structures (450 ft).
- Clear signage must be posted at hunting access points.
- Public must be notified of hunting dates.
- All participants must sign liability waivers.
- Law enforcement and wildlife officials should oversee compliance.

iii. Communications and Stakeholder Engagement

- Community outreach should include information meetings, public FAQs, and transparent online reporting.
- Venison donation partnerships should be established and encouraged to promote positive community engagement.

iv. Budget and Resources

- Primary costs include signage, data collection, processing, and coordination.
- Encourage community volunteers to assist with signage and communication.

- Continue partnerships between local agencies, conservation organizations, and universities to enhance research and cost-sharing opportunities.

v. Legal and Policy Framework

- Operate all actions under relevant state statutes and municipal ordinances governing hunting, wildlife management, and public safety.

Target

- Varies by DMU.

Adaptive Management

- Monitor hunting impacts through data collection including number of deer harvested, number of volunteer hours, pounds of venison donated, collision data.
- Evaluate program performance through community feedback, ecological monitoring, and safety audits.

2. Localized Deer Reduction with a Focus on Ethical Utilization

Ethical utilization in deer management integrates ecological, social, and cultural values to ensure that deer population control measures are humane, transparent, and beneficial to both humans and the environment. This concept is grounded in the principles of the North American Model of Wildlife Conservation, which maintains that wildlife resources are a public trust, must not be wasted, and should be managed scientifically for the benefit of current and future generations (Organ et al. 2012).

Rationale for Localized Deer Reduction with a Focus on Ethical Utilization

Ethical utilization means that all deer taken through management activities, whether through regulated hunting, culling, or damage permits, should be fully and respectfully used. This includes meat, hides, bones, or other parts that can be applied for educational, cultural, or community benefit. Such practices prevent waste, reinforce respect for wildlife, and foster public trust in management programs (MDNR 2024). It also reflects Indigenous and community ethics emphasizing gratitude and non-wasteful harvests.

Localized Deer Reduction Recommendations

1) Ensure that harvested deer are used for human consumption, scientific study, or cultural purposes.
2) Promote humane harvest methods that minimize suffering and adhere to state and federal regulations.
3) Strengthen collaboration between hunters, local food networks, tribal communities, and conservation organizations.
4) Maintain transparent reporting of deer harvest and utilization outcomes.
5) Build public trust through accountability, communication, and ethical practices in all management programs.

Target

- *Utilization Rate:* At least 95% of harvested deer fully utilized (meat, hides, or research samples).
- *Donation Target:* Minimum of 2,000 pounds of venison donated annually to hunger-relief programs.

Adaptive Management

- *Reporting: Annual summary of utilization outcomes published publicly.*
- *Compliance: Integration of ethical use clauses in all county or municipal deer management permits.*

3. Facilitating Hunter Recruitment and Access to Land

Deer overabundance across Kent County represents a classic case of market failure through negative externalities, whereby individual behaviors and land use decisions produce social costs not borne by those creating them (Bator 1958). A framework facilitating hunter recruitment (youth), managed access, and cooperative harvest within Kent County would establish a structured system that connects hunters with suitable private or public lands, thereby redistributing costs of mitigating deer overabundance across the community.

Objectives of facilitating hunter access to land in Kent County include:

1) Connecting willing private landowners with hunters.
2) Facilitating hunting opportunities in areas with high deer densities.
3) Mitigation of ecological and agricultural damage.
4) Increase community awareness and engagement in wildlife management.

Rationale for Facilitating Hunter Access to Land:

Ecological – Deer abundance data for Kent County (Figures 7 - 8) show that deer populations are thriving in fragmented suburban and agricultural interfaces where hunting is often restricted. Ecological restoration efforts in areas where high deer densities alter ecosystems are unlikely to succeed without concurrent population management. In the absence of natural predation, hunting is critical to help control overpopulation and ecological degradation caused by overabundant deer.

Human and Agricultural Impacts – According to the results of the 2024 public survey, Kent County's residents have expressed concern over landscaping. Anecdotally through email correspondence and conversations at the 2025 public open houses, residents and insurance companies have expressed concerns over agricultural impacts. Locations of complaints correlate strongly with expanding residential zones near agricultural and forested lands. Farmers face sustained losses along field edges, particularly where hunting access is limited (Boyer et al. 2024). These damages represent negative externalities – private landowners bear ecological and financial costs that result from collective management inaction. Opening structured access for qualified hunters would help reduce deer densities in agricultural zones, protecting crops and native ecosystem integrity while addressing economic inequalities between producers and suburban landowners.

Limitations in Current Hunting Access – Much of Kent County's landscape consists of fragmented parcels or areas near residential developments where hunting is concurrently prohibited or logistically difficult. A coordinated access framework – linking landowners, hunters, and local agencies – would allow population control where it is most needed without expanding unrestricted hunting zones.

Social and Governance Factors – Public survey and data from Open House feedback collected through the Kent County Deer Management Coalition reveal strong resident interest in transparent, science-based management and shared responsibility. Transparency is critical for successful management and positive outcomes.

A hunter-farmer access program aligns with this statement by:

- Empowering landowners to participate voluntarily.
- Promoting public education on safety and ecological benefits.
- Providing an equitable structure for citizen involvement in adaptive management.

Hunter Access Recommendations

i. Participation

- Landowners with a minimum of 5 acres enroll their land in a hunter access program organized and regulated by local government. Landowners specify restrictions.
- Hunters also register as interested parties seeking access.
- Create legally-binding contracts and liability waivers.

Target

- Varies by DMU.

Adaptive Management

Expanding hunting access through a cooperative model integrates biological data, human dimensions, and stakeholder collaboration, which are hallmarks of adaptive management and public trust governance (Ostrom 1990, Decker et al. 2012). Performance of this recommendation should be monitored and evaluated through data collection including number of landowner participants, area of land enrolled in the program, hunter numbers, harvest numbers, harvested deer demographics (sex, age, weight, lactation status, antler points, size).

Proposed Habitat Management Recommendations

Residential expansion and land-use changes have created fragmented landscapes that provide both shelter and abundant food sources for deer. Human activities such as ornamental landscaping and intentional feeding provide unnatural life requisites for deer, which significantly alter deer behavior, reduce their natural wariness of people and increase habituation to urban environments. Wildlife foraging in human-modified landscapes causes deer to associate suburban areas with reliable food sources, leading to intergenerational behavioral conditioning where “subsequent generations of deer raised on food within urban and suburban environments become more associated with urban habitat than natural habitat” (Fehlmann et al. 2021). Furthermore, brushy edges created in urban and suburban fragmented landscapes often promote the growth of brushy vegetation providing hiding cover for deer. The following recommendations pertain to managing and manipulating vegetation to reduce hiding cover and potential food sources that concentrate deer:

4. Increasing Road Right-of-Way Mowing

The Kent County Road Commission (KCRC) currently maintains approximately 2,000 miles of roadway across Kent County. Mowing is typically conducted twice annually, with the initial cut occurring in the early season and a second cut later in the growing season. The first mowing primarily focuses on maintaining line-of-sight safety along roadways and intersections. Initial cuts are generally 6–12 feet in width and may be expanded an additional 6–12 feet during the second mowing, depending on the right-of-way boundaries and site-specific environmental factors, such as saturated or soft soil conditions (J. Byrne, personal communication, July 28, 2025).

KCRC maintains ROW areas along major highways, interstates, and Michigan-designated M-highways. Funding for brush control and mowing operations is provided by the Michigan Department of Transportation (MDOT), which allocates resources for labor, fuel, and equipment maintenance. MDOT-managed road systems follow Integrated Roadside Vegetation Management (IRVM) practices, with mowing standards established under Public Act 174 of 1999, and revisions in 2012 (Michigan Department of Transportation 2012).

Rationale for Increasing Right-of-Way Mowing

Unmaintained rights-of-way (ROW) often create optimal grazing areas and hiding cover for deer along highways and roadways, particularly as human development expands and deer-roadway interactions increase. Deer frequently use these areas during low-light or nighttime conditions, when they are more difficult for motorists to detect. When startled by approaching vehicles within ROW, deer are more likely to spook and run, increasing the risk of car/deer crashes (Lobo & Millar 2013). Unmaintained ROW can also reduce driver visibility, limiting the ability to identify deer in time to prevent collisions (Rodgers & Robins 2006, Ford et al. 2011).

Mowing Recommendation

i. Implement a third mowing cycle on all Michigan state-owned roads under KCRC jurisdiction to better manage roadway and ROW areas. This recommendation is supported by research indicating that the likelihood of vehicle-deer collisions increases when motorists travel at speeds of 60 mph or higher. Most state-owned roadways within the jurisdiction have posted speed limits of 55 mph or greater, except for M-highways intersecting or passing through urban or village areas. The third mowing should occur near the end of the growing season and aim to cover as much of the ROW as possible. However, environmental and operational constraints—such as wet ground conditions or the presence of sensitive or ecologically protected habitats—may limit mowing in certain areas. The

implementation of a third mowing cycle is contingent on available funding from the Michigan Department of Transportation (MDOT).

ii. Implement a third mowing cycle on approximately 200 miles of county-owned roads identified as high to medium risk for vehicle-deer collisions (Figure 14). This mowing should occur near the end of the growing season and aim to cover as much of the ROW as possible. Environmental and operational constraints—such as wet ground conditions, ecosystem management objectives, or the presence of sensitive or ecologically protected habitats—may limit mowing in certain areas.

iii. Cities and villages in Kent County with road and ROW maintenance responsibilities should conduct a late-season mowing cycle in areas with the highest probability of vehicle-deer collisions. Data for Kent County indicates that the risk of deer-vehicle collisions peaks in November. ROW should be cut to the maximum feasible width to increase roadway visibility. However, mowing may be restricted by environmental conditions, sensitive habitats, or municipal ordinances and local laws that limit the ability to mow to the recommended width. Supplemental maps are provided in Appendix 2 of this document to identify roads with the highest priority for mowing due to their designation as roads with higher speeds and traffic volume combined with very high or extreme risk of deer vehicle collisions based on past patterns of vehicle-deer collisions (Figure 14).

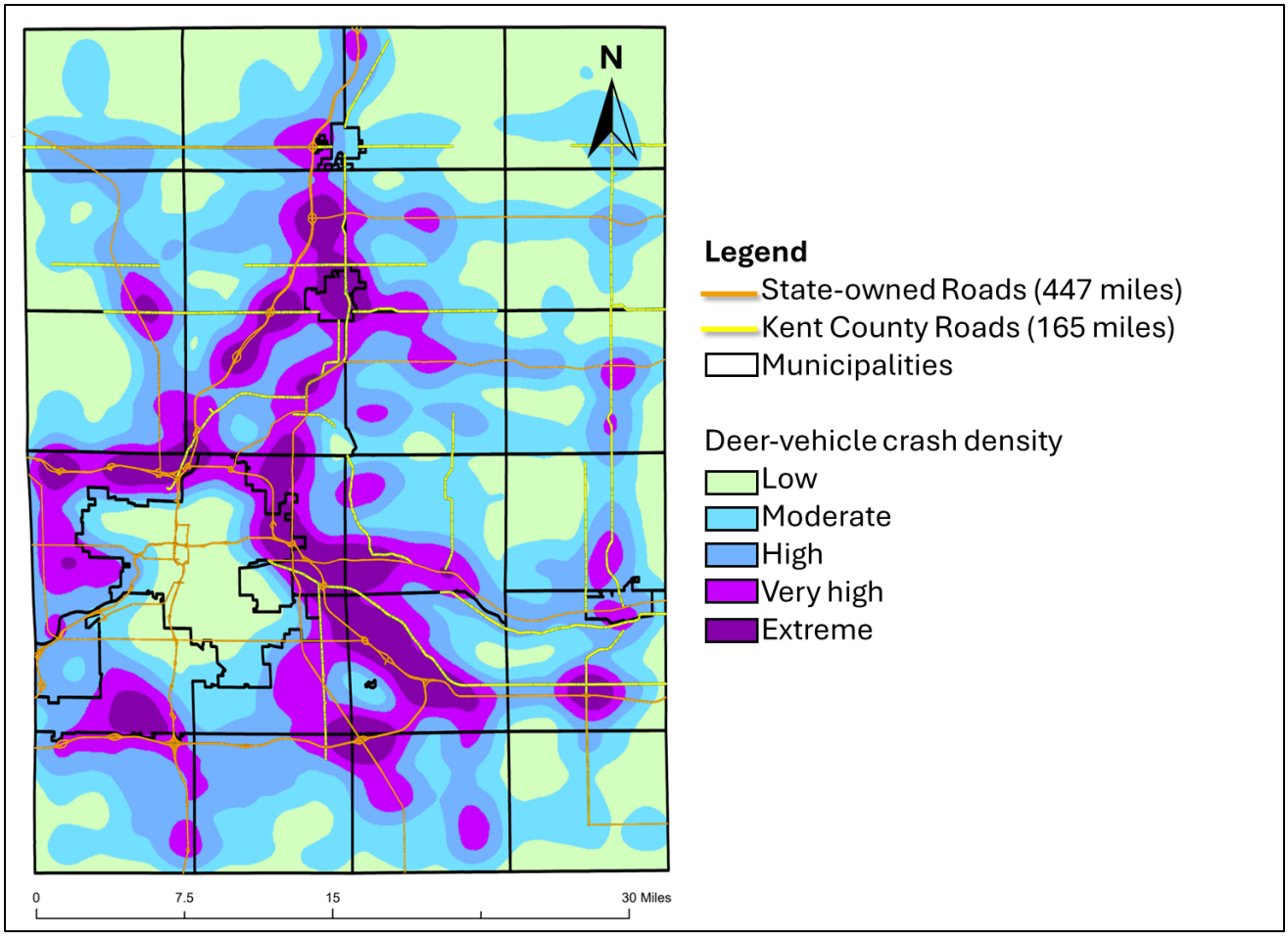

Figure 14. Road ownership and municipality boundaries in relation to deer-vehicle crash densities as determined from crash reports collected between 2021–2023. (Michigan State Police UD-10 Car Accident Database)

Target

- Achieve at least a 10% reduction in deer-vehicle collisions within one year of implementing these initial recommendations countywide.
- This decrease should be evident in both UD-10 crash reports and carcass removal data.

Adaptive Management

Continue assessing the number, location, and distribution of annual vehicle-deer crash data. Additionally, compare crash numbers in mowed areas to those in the same areas prior to mowing. Monitor the annual changes as well as the pre-post mowing comparison and adjust the mowing recommendations to account for changes in distribution of collisions.

5. Native Landscaping Planting

Rationale for Native Landscaping

Invasive plants and some non-native ornamental plants may create desirable food or habitat conditions for deer. For example, invasive plants frequently outcompete native plants and tend to form dense thickets, which provide hiding cover and food for deer. Many invasive shrubs such as Amur honeysuckle (*Lonicera maackii*) and autumn olive (*Elaeagnus umbellate*) spread easily along disturbed areas like edges between residential areas and along rivers and streams. These species provide food for deer, especially in the early spring when they tend to green-up earlier than native plants (Wright et al. 2019). Additionally, the growth of shrubs like autumn olive creates thick understory cover and reduced human visibility, allowing deer to bed or travel in concealment (Courteau 2005). Non-native ornamental plants such as hostas, daylilies, and roses are also actively eaten by deer. Deer will eat anything if food is scarce, but some plants are less tolerated by deer and have better resistance to browsing than other plants.

Landscaping Recommendation

i. Encourage residents to plant native landscaping vegetation that is generally considered less preferable deer food. Several flowering and attractive plants may be good options for gardens (Table 2; source: Prairie Moon Nursery). Residents may also acquire native plants from Kent County Conservation District, Watershed Councils, or other native plant sales or giveaways. Establishing native plants also promotes pollinator conservation, diversity, and connectivity throughout urban and suburban areas.

Table 2. Suggestions for native flowering plants that are generally not preferred food for white-tailed deer.

Name	Bloom	Pollinator Favorite	Bird Favorite	Spread Readily
Anise Hyssop	Jun-Sep	☑	☑	
Big Bluestem	Jun-Sep		☑	☑
Blue Sage	Aug-Oct			
Blue Vervain	Jul-Sep	☑	☑	
Blue-Stemmed Goldenrod	Aug-Oct	☑	☑	
Bottlebrush Grass	Jun-Aug		☑	
Bradbury's Monarda	Jun-Jul	☑	☑	
Bush's Coneflower	Jun-Aug	☑	☑	
Butterfly Weed	Jun-Aug	☑	☑	
Cardinal Flower	Jul-Sep	☑	☑	
Clustered Mountain Mint	Jul-Sep	☑		
Columbine	Apr-Jun	☑	☑	
Common Blue Violet	Apr-Jun	☑	☑	
Common Ironweed	Jul-Sep	☑	☑	
Common Milkweed	Jun-Aug	☑	☑	
Common Wood Sedge	May-Jun			
Dense Blazing Star	Jul-Sep	☑	☑	
Early Figwort	May-Jul	☑	☑	
Eastern Prickly Pear	Jun-Jul			
False Aster	Aug-Oct	☑	☑	☑
Flowering Spurge	Jun-Aug	☑	☑	
Foxglove Beardtongue	Jun-Jul	☑	☑	
Golden Alexanders	Apr-Jun	☑	☑	
Great Blue Lobelia	Jul-Oct	☑	☑	
Hairy Mountain Mint	Jul-Aug	☑	☑	☑
Hoary Mountain Mint	Jul-Sep	☑		
Hoary Vervain	Jun-Sep	☑	☑	
Indian Grass	Aug-Sep		☑	☑
Jacob's Ladder	Apr-Jun	☑		
Joe Pye Weed	Jul-Sep	☑	☑	☑
Lance-leaf Coreopsis	May-Aug	☑	☑	
Large Flowered Beardtongue	May-Jun	☑	☑	
Lead Plant	Jun-Aug	☑		
Little Bluestem	Jul-Oct		☑	
Long-beaked Sedge	May-Jul			
Maidenhair Fern	N/A			
May Apple	May-Jun			

Meadow Blazing Star	Aug-Sep	☑	☑	
Mistflower	Sep-Oct			☑
Mountain Mint	Jun-Sep	☑	☑	☑
Nodding Onion	Jul-Aug	☑		☑
Old Field Goldenrod	Aug-Sep	☑	☑	
Orange Coneflower	Jul-Sep	☑	☑	
Pagoda Dogwood	May-Jul	☑	☑	
Pale Purple Coneflower	Jun-Jul	☑	☑	
Pearly Everlasting	Jun-Sep			☑
Pennsylvania Sedge	Apr-Jun		☑	
Pink Turtlehead	Jul-Sep	☑	☑	
Poke Milkweed	Jun-Jul	☑		
Prairie Dropseed	Aug-Oct	☑		
Prairie Smoke	Apr-Jun	☑		
Purple Coneflower	Jul-Sep	☑	☑	
Purple Giant Hyssop	Jul-Oct	☑	☑	
Purple Love Grass	Jul-Aug			
Purple Prairie Clover	Jul-Sep	☑	☑	
Pussy Toes	Apr-Jun			
River Oats	Jul-Sep			☑
Rose Mallow	Jul-Sep		☑	
Rose Milkweed	Jun-Aug	☑	☑	
Showy Goldenrod	Sep-Nov	☑	☑	
Shrubby St. John's Wort	Jul-Sep	☑	☑	
Side-oats Grama	Aug-Sep	☑		
Spider Milkweed	May-Jun	☑		
Spotted Bee Balm	Jul-Sep	☑	☑	
Sweet Grass	May-Jul			
Switch Grass	Jul-Sep		☑	☑
Tennessee Coneflower	Jul-Sep	☑	☑	
Violet Wood Sorrel	Apr-Jun			
Virginia Bluebells	Apr-May			
Virginia Waterleaf	May-Jun			☑
Western Sunflower	Jul-Sep	☑		☑
Whorled Milkweed	Jul-Sept	☑	☑	
Wild Bergamot	Jul-Sep	☑	☑	
Wild Geranium	Apr-Jul	☑	☑	
Wild Ginger	Apr-Jun			
Wild Leek	Jun-Jul			
Wild Strawberry	Apr-Jun		☑	

ii. Remove dense thickets of invasive shrubs like autumn olive, honeysuckle, oriental bittersweet, barberry, and others. We recommend working with watershed

councils and conservation organizations to remove invasive vegetation and restore river/creek corridors to native and natural vegetation structure and composition. Reducing hiding cover and restoring the structure and composition of natural areas to native vegetation would help ecosystems regain their historical function (Peebles-Spencer et al. 2017). However, restoration of native vegetation is challenging in areas with high deer densities and subsequently high browsing pressure on plants.

Target

- Decrease the number of complaints over time. This is a difficult metric to assess, as the number of complaints in an area may be dependent on the density of people in the area and local deer density, especially in newly established residential areas, or those expanding into natural areas.

Adaptive Management

- Continue to monitor and tally the number of complaints from residents.
- Continue working with conservation organizations, native plant nurseries, school groups, and media outlets to educate landowners on gardening and landscaping options that may be less attractive to deer browsing.

6. Establish and Enforce Ordinances to Ban Deer Feeding

Rationale for Establishing Ordinances Banning Deer Feeding

According to the Michigan Department of Natural Resources, deer feed is defined as "substance composed of grains, minerals (including salt and salt blocks), fruits, vegetables, hay or other food materials that may attract deer or elk for any reason other than hunting. Naturally occurring foods, standing agricultural crops, or food placed as a result of using normal agricultural practices are not considered to be feed." (https://www.michigan.gov/dnr/managing-resources/laws/baiting). Feeding concentrates deer in local areas and may contribute to the spread of diseases through direct contact with infected deer or their saliva at feeding stations. Deliberate placement of food in areas that are accessible to deer is considered feeding and is illegal in the lower peninsula. Despite being illegal, some Kent County residents still feed deer because they enjoy seeing them in their yards. In particular, residents who responded to the Deer Management Coalition's public survey (November 2024) reported neighbors feeding deer in the City of Walker, which

concerned several residents. Research shows that wildlife foraging opportunities in human-modified landscapes (i.e., residential areas) change movement patterns and wildlife behavior – wildlife become familiar with the availability of food, come to expect it, and teach their offspring how to access it (Fehlmann et al. 2021). Thus, subsequent generations of deer raised on food within urban and suburban environments become more associated with urban habitat than natural habitat.

Recommendations Pertaining to Deer Feeding

i. Use media and other sources for public communication to inform and emphasize that feeding deer is illegal in Kent County.

ii. Allow mechanisms for residents to report instances of deer feeding in their local areas.

iii. Enforce feeding bans through local law enforcement and/or ordinance enforcement personnel if deer feeding is observed or reported.

iv. Encourage residents to modify bird feeders to prevent deer from accessing large amounts of food, and clean up extra bird feed from the ground.

Target

- 100% compliance on the feeding ban in Kent County. Implementing mechanisms for education of the state law, reasons for the law, and consequences for violating the law may help reduce deliberate actions to feed deer.

Adaptive Management

- Establish local ordinances to ban deer feeding and reinforce the state law.
- Create a system for residents to directly (and anonymously) report instances of deer feeding.
- If feeding continues to be an issue in specific areas, use local law enforcement or an ordinance enforcement office to fine or penalize repeated offenders.

Proposed Recommendations Pertaining to Human Dimensions

Public community consequences of negative externalities refer to the unintended and socially shared consequences of human-altered environments and behaviors that encourage deer overabundance—manifesting in traffic accidents, property damage, ecological imbalance, and community conflict. Therefore, effective deer management requires integrating ecological science with an understanding of the behavioral and social perceptions of the magnitude of negative externalities to help restore sustainable coexistence between humans and wildlife.

7. Monitor Public Perceptions of Deer

Rationale for Monitoring Public Perceptions

In Kent County, negative externalities pertaining to overabundant deer include:

- *Increased deer–vehicle collisions* - Human development and road construction intersect key deer corridors, causing thousands of crashes annually that endanger drivers, damage property, and impose healthcare and insurance costs on the public.
- *Property and agricultural losses* - Overabundant deer populations cause landscaping damage and crop loss, affecting private landowners and small-scale farmers.
- *Public health concerns* - Artificial feeding increases deer congregation, which elevates the risk of disease transmission such as chronic wasting disease (CWD) or bovine tuberculosis.
- *Cultural and ethical divides* - Research shows differing public perceptions regarding deer management—some residents value deer aesthetically and oppose lethal management, while others prioritize safety and ecological balance (Decker et al. 2012). This social tension complicates policy consensus and enforcement.

Recommendations Pertaining to Human Dimensions

i. Management success requires transparency, public education, and broad citizen participation in compliance and monitoring programs to avoid a “tragedy of the commons” dynamic where individuals acting in their self-interest to sustain overabundant deer (e.g., by feeding or concentrating deer) collectively degrade public safety and ecosystem health.

ii. Continue with periodic public surveys to monitor sentiment and perceptions about deer. Surveys should be implemented 1 year following management implementation using an easily accessible platform such as Survey123.

Target

- Majority of Kent County residents satisfied with deer numbers and management actions being implemented in their specific DMU.

Adaptive management

- Monitor public sentiment and perceptions of negative externalities within DMUs and solicit ideas and input for management.
- Revise management recommendations within each DMU accordingly.

Proposed Strategic Planning Recommendation

8. Develop a Strategic Deer Management Plan

Kent County leadership should develop a strategic deer management plan to provide structure, direction, and rationale for future decision-making. A strategic plan should clearly state a mission and vision for deer-human interactions within the county, the desired conditions, and a timeframe in which to achieve them. A strategic plan will 1) provide direction and focus on specific tasks needed to achieve the desired conditions; 2) indicate areas in which research should be conducted or data should be collected to ensure decisions are data-driven; 3) facilitate allocation of resources needed for deer management, habitat management, mitigation, or prevention; and 4) promote adaptability of management through monitoring and adjustment of recommendations needed to achieve the desired target outcomes.

The management plan should address factors identified by county leaders and residents (through public surveys) as important in deer management (Figure 15). The strategic plan should be publicly available for viewing and commentary, and all data/reports pertaining to assessment and monitoring of goals and objectives should be disseminated to the public. Through the collaboration with the Kent County Deer Coalition, analysis of the public survey data, and feedback from the public engagement open houses, residents of Kent County appreciate being informed and included in deer management decisions. Transparency is critical for successful management and positive outcomes.

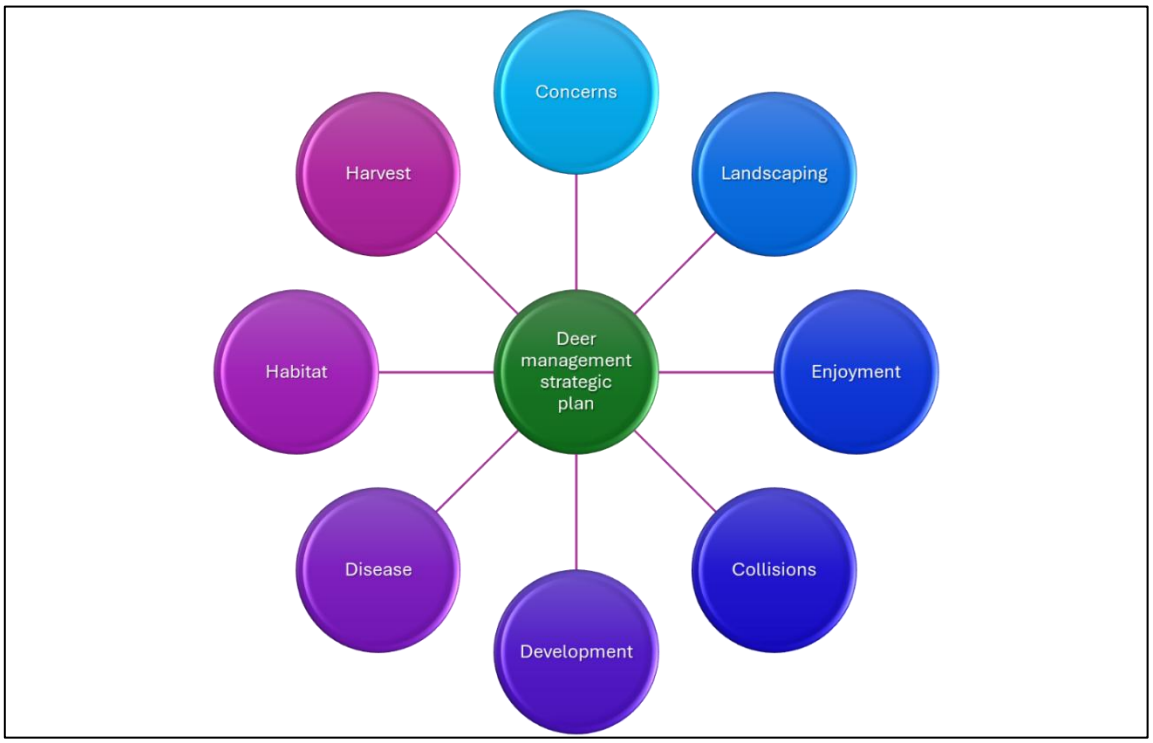

Figure 15. Issues important to include in a county-wide strategic deer management plan.

Adaptive Framework and 3-Year Timeframe (2026 – 2028)

Successful urban deer management is not a one-size-fits-all, short-term solution. It needs cooperation, communication, leadership, research-based adaptive management (Hygnstrom et al. 2011) and two-eyed-long-term vision. To continue advancing the Kent County Deer Management Coalition's goals, the following recommendations provide measurable, data-driven actions for adaptive management over the next three years.

Annual Spotlight and Population Surveys - Continue seasonal spotlight surveys each winter and late summer to assess population density estimates and spatial trends relative to the 2024–2025 baseline data. Pending funding, integrate thermal drone surveys in suburban zones to supplement visual counts.

Collision Data Integration - Collect and analyze UD-10 crash and carcass removal data collected by Michigan State Police and Kent County Road Commission. Compare pre- and post-mowing results in high-risk corridors to evaluate the effectiveness of the third cycle mowing. Maintain a public ArcGIS dashboard for countywide collision data trends.

Vegetation and Habitat Management - Establish browse impact plots within forest and park sites to evaluate habitat recovery (Fairfax County Government 2025). Monitor invasive removal and native planting projects initiated under vegetation management recommendations. Establish permanent vegetation transects and track native plant survival rates. Coordinate with park departments and watershed councils to quantify restored acreage and ecosystem outcomes (Peebles-Spencer 2017 et al. 2017).

Enforcement and Community Compliance - Track deer-feeding ordinance compliance and violations. Conduct annual outreach campaigns emphasizing that deer feeding is illegal and ecologically harmful (Fehlmann et al. 2021, MDNR 2020). Establish annual compliance audits and publish results in the public report.

Public Engagement and Transparency - Host at least one open-house session annually and publish an annual 'State of the Deer in Kent County' report summarizing all monitoring data. Maintain transparent access to data through the public ArcGIS dashboard (Georgia Department of Natural Resources 2015).

Adaptive Management and Research Integration - Conduct annual interdisciplinary reviews among GVSU, Michigan Department of Transportation (MDOT), Kent County Road Commission, and county agencies to evaluate progress toward established metrics. Adjust management strategies, mowing schedules, or enforcement as necessary (Fairfax County Government 2025). Seek additional MDOT or state funding to expand ROWs and vegetation monitoring projects.

Three-Year Action Timeline

Year 2026: Implement deer population management by facilitating hunting and ethical use as soon as feasible, collect and analyze harvest data in early 2026. Complete first full year of three-cycle ROW mowing; establish vegetation and collision monitoring baselines. Continue hunting efforts during the 2026 hunting season.

Year 2027: Continue hunting efforts during the legal hunting season. Continue monitoring deer-vehicle collisions and public sentiments. Launch public data dashboard and conduct first feeding-ban compliance review.

Year 2028: Evaluate cumulative 3-year results and develop the 2029–2034 Kent County Strategic Deer Management Plan.

COUNTY-WIDE GOALS THROUGH DMU-SPECIFIC PRESCRIPTIONS

The initial management goal is to reduce the number of deer-vehicle collisions by at least 1050 collisions (comparable to the 2021 collision number) within the next 2 years by increasing the number of hunter-harvested deer by at least 1900 each year. This harvest rate represents a 45% increase in harvested deer within the first year, and is feasible with strategic planning, county leadership, and community cooperation. This minimum harvest increase would only remove 13 – 20% of the estimated deer population in Kent County, and is not enough to reduce the population long-term (MDNR 2025, wildlife biologists, personal communication.) Harvest should focus on antlerless deer. Harvest rates must, at minimum, be maintained or increased. Harvest rates, deer-vehicle collisions, and abundance estimates should be monitored to facilitate adaptive management.

According to the Michigan DNR deer harvest report summary, there were between 10,872 – 13,722 hunters that hunted at least day in Kent County during the 2024 hunting season (MDNR 2025), but only 4140 deer were harvested (approximately 33% success rate). Counties with a smaller human population, but comparable landscape (centralized urban areas with suburban sprawl and a mix of agriculture and forest) currently have deer harvest numbers near or above 7,000 including Jackson (7748), Lapeer (6981), Montcalm (6921) and Saginaw (7928) (MDNR 2025). These counties report lower hunter numbers (8367 in Saginaw – 11,290 in Montcalm), but likely have better hunter access due to more areas without hunting restrictions and larger, privately-owned land parcels.

Increasing hunter-harvested deer numbers in Kent County is feasible through urban archery hunting programs (Recommendation 1), localized deer reduction with focus on ethical utilization (Recommendation 2), and facilitating hunter recruitment and access to land (Recommendation 3).

With this goal, deer mortality rates through ethically-harvested and utilized deer would be compensatory to mortality from deer-vehicle collisions. In essence, the cause of deer mortality would be shifted from collisions to harvest.

Specific prescriptions are recommended for each DMU; however, to be effective, management must occur county-wide across all DMUs. Deer-management units were delineated based on commonalities in deer density patterns, habitat suitability, public perceptions, and deer-vehicle collisions. Specific prescriptions for each DMU are described below:

KC – 01 Northwestern area: Alpine Twp, Cedar Springs, Solon Twp, Sparta Twp, Tyrone Twp

This area is dominated by orchards and agriculture. Residents generally enjoy deer and have relatively fewer deer-related concerns than residents in other areas of the county. There were lower levels of public engagement and input from residents in this area of the county.

Management Prescription for KC – 01

Localized deer reduction (Recommendation 2) with focus on ethical utilization should occur in problematic areas. Reduction can be facilitated through applications for crop depredation permits through the MDNR and establishing hunter access to land (Recommendation 3). Mowing recommendations for road ROW clearing to improve driver visibility (Recommendation 4) may help reduce the number of deer-vehicle collisions in areas with high rates. Continue monitoring public perceptions of deer (Recommendation 7).

KC – 02 Northeastern area: Algoma Twp, Cannon Twp, Courtland Twp, Nelson Twp, Oakfield Twp, Spencer Twp

The northeastern area of Kent County supports relatively high-quality deer habitat due to the interspersion of agriculture, forests, and wetlands with relatively fewer areas of developed and impervious land cover. The high-quality habitat distributed between this area and the southeastern part of the county creates a corridor facilitating movement between the 2 areas. High deer densities in areas of this DMU likely contribute to the prevalence of chronic wasting disease.

Management Prescription for KC – 02

Localized deer reduction (Recommendation 2) should be focused in areas with higher deer densities and high rates of deer-vehicle collisions. Additionally, localized deer reduction would help slow rates of chronic wasting disease spread. Consider coordination efforts with the MDNR for disease surveillance and carcass-disposal education (no backyard dumping). Data should be collected to quantify number and locations of dead deer observed by residents to monitor chronic wasting disease. Any deer harvested should be tested for disease before consumption. Continue monitoring public perceptions of deer (Recommendation 7) and communicate annually to residents about disease management and baiting/feeding bans.

KC – 03 West-central area: East Grand Rapids, Grand Rapids, Grandville, Kentwood, Plainfield Twp, Rockford, Walker, Wyoming

This area of the county is highly urbanized at the core of the cities comprising this unit. Urban expansion and subdivisions expand outward. Deer habitat quality is relatively lower throughout this DMU, but move between pockets of higher-quality habitat in green spaces and local parks. Deer tend to be funneled through the western side of this management unit as they travel from the northern portion of the county southward along a corridor of high-quality habitat east of US-131 to the Grand River and then West toward Walker. Based on deer spotlight surveys, deer are also likely traveling through a corridor of high-quality habitat from the southeast and moving through the City of Walker. Walker does not have the extent of impervious surfaces that Grand Rapids has, so deer are able to move through this area relatively easily. Additionally, deer are likely moving eastward from Ottawa County into the green space surrounding Walker. Residents in this DMU are intolerant of deer and perceive there are too many. Residents are concerned primarily about deer damage to landscaping, ecosystem damage, and ticks/disease. High rates of deer-vehicle collisions occur particularly within the cities of Kentwood, Wyoming, and Walker, along the perimeters of Grand Rapids and Grandville, and along the highway corridor connecting Grand Rapids to Rockford.

Management Prescription for KC – 03

Deer-reduction through urban archery hunting (Recommendation 1) with a focus on local deer reduction and ethical utilization (Recommendation 2) should occur within this DMU. Elevated hunting by skilled archers can occur in parks or green spaces. Road ROW visibility should be maintained by clearing vegetation along ROWs where high rates of deer-vehicle collisions occur (Recommendation 4.) Residents should clear invasive brushy vegetation and focus on native landscape plantings and deer-resistant vegetation (Recommendation 5) to decrease the availability of desired food sources. Ordinances to ban feeding should be established and enforced (Recommendation 6) to reduce the negative externalities that concentrating deer inflicts on the majority of the community. Continue monitoring public perceptions of deer (Recommendation 7.) Develop a strategic plan (Recommendation 8.)

Most of Kent County's population occurs within this DMU. Additionally, most of the input from the public surveys and open house attendees were from residents in this DMU. It is evident that residents within KC – 03 feel strongly about deer management. Green spaces in this DMU could be an ideal location for facilitating deer harvest efforts and community-sharing of harvest.

KC – 04 Central area east of the City of Grand Rapids: Ada Twp, Cascade Twp, Grand Rapids Twp

This DMU is moderately developed with suburban residential areas. Habitat quality is relatively poor in the western and southern parts, but is high in the northeastern parts. Aras with relatively poor habitat quality are interspersed with pockets of better-quality habitat provided by green spaces, residential woodlots, and parks. This area likely facilitates high rates of deer movement between low and high quality habitat areas. This movement is evidenced by the high number of deer-vehicle collisions and the distribution of habitat. Deer in lower-quality habitat tend to move more than deer in higher-quality habitat areas, because their life requisites are not as readily available. Additionally, this DMU is a core area for deer infected with epizootic hemorrhagic disease.

Management Prescription for KC – 04

Deer-reduction through urban archery hunting (Recommendation 1) with a focus on localized deer reduction and ethical utilization (Recommendation 2) should occur within this DMU. Elevated hunting by skilled archers can occur in parks or green spaces. There may be areas of privately-owned land in the higher-habitat suitability areas where deer congregate that may offer hunter access (Recommendation 3). Community outreach and engagement is necessary to facilitate hunter access programs. Road ROW visibility should be maintained by clearing vegetation along ROWs where high rates of deer-vehicle collisions occur (Recommendation 4.) Residents should clear invasive brushy vegetation and focus on native landscape plantings and deer-resistant vegetation (Recommendation 5) to decrease the availability of desired food sources. Ordinances to ban feeding should be established and enforced (Recommendation 6) to reduce the negative externalities that concentrating deer inflicts on the majority of the community. Continue monitoring public perceptions of deer (Recommendation 7.) Develop a strategic plan (Recommendation 8.)

KC – 05 East and southeastern area: Bowne Twp, Caledonia Twp, Grattan Twp, Lowell, Lowell Twp, Vergennes Twp

Relatively high-quality deer habitat support high deer densities in this area, especially in Vergennes Township. Residents generally enjoy seeing deer, but express some concerns about deer-vehicle collisions, landscaping, deer health, and ticks/disease.

Management Prescription for KC – 05

Localized deer reduction with a focus on antlerless harvest and ethical utilization (Recommendation 2) should occur near problematic areas in Vergennes and Lowell Townships where higher rates of deer-vehicle collisions align with high-quality habitat and high deer densities. Reduction can be facilitated through applications for crop depredation permits through the MDNR and establishing hunter access to land (Recommendation 3). Mowing recommendations for road ROW clearing to improve driver visibility (Recommendation 4) may help reduce the number of deer-vehicle collisions in areas with high rates. Continue monitoring public perceptions of deer (Recommendation 7).

KC – 06 Southwestern corner: Byron Twp, Gaines Twp

This area of the county has moderate-quality habitat and moderate deer densities. Deer from this area are likely moving northward into DMU – 03 through pockets of higher-quality habitat corridors. Residents in this DMU generally enjoy seeing deer and reported relatively few concerns compared to residents in other DMUs. Moderate frequencies of vehicle collisions occur near M-6.

Management Prescription for KC – 06

Deer reduction efforts are not a priority in this DMU, although harvest should focus on antlerless deer. There may be opportunities for hunter access to private lands in this DMU (Recommendation 3). Mowing recommendations for road ROW clearing to improve driver visibility along M-6 and arterial roads (Recommendation 4) may help reduce the number of deer-vehicle collisions in areas with high rates. Continue monitoring public perceptions of deer (Recommendation 7).

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The time and effort spent by many individuals for data collection, volunteer effort, communications, guidance, assistance, and other support is greatly appreciated.

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Kent County

Kent County Deputy Administrator - Mark Rambo

City of Kentwood Deputy City Administrator – Shay Gallagher

Kent Count Road Commission - Jerry Byrne, Maura Lamoreaux, TJ Likens, Andy Albertson

Solid Waste Operations Manager – Kent County Department of Public Works - Daniel Rose

REGIS (Regional Geographic Information System) - Jason Moore

Law Enforcement - East Grand Rapids Department of Public Safety, Grand Rapids Police Department, Grandville Police Department, Kent County Sheriff's

Department, Kentwood Police Department, Rockford Department of Public Safety, Walker Police Department, Wyoming Police Department

Michigan Department of Natural Resources (MDNR)

Wildlife Division- John Niewoonder- Flat River Office, Nik Kalejs- Twin Lake Office

Law Enforcement Division- Lt. Gerald Thayer- Plainwell Customer Service Center

Michigan Department of Transportation (MDOT)

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Appendix 1. Detailed methodology for survey of public perception of deer and margin of error by jurisdiction.

A Kent County Deer Observation and Opinion Survey was active between November 14 – December 14, 2024. The purpose of this survey was to collect information on public perceptions of deer within Kent County jurisdictions. The survey was created by researchers from the Biology Department, Natural Resources & Environmental Management program using the Survey123 application in ArcGIS Online. The survey was disseminated to the public by providing a QR code and URL via Kent County government websites and media outlets. The survey questions were reviewed and approved by the GVSU Office of Research Compliance & Integrity. As this study did not collect personal identifiable information, it did not require oversight by the Institutional Review Board for human subjects research according to federal regulations (Project Number 25-071-H.)

Responses to survey questions were analyzed, summarized by jurisdiction (minor civil division), and used to help understand the distribution and variation in public sentiments regarding deer management in Kent County.

A-1.1. Deer Observation and Opinion Survey

Deer Observation and Opinion Survey

Please help us collect data on the experiences and opinions about deer in Kent County. Participation in this survey is voluntary. Results of this study will provide Kent County with baseline data on deer distribution and public perceptions. No identifying information is associated with this survey. This data will be collected by Grand Valley State University and results will be shared with representatives from Kent County.
Any questions can be relayed to deer@kentcountymi.gov

1. How often do you see deer?
   This could be at home, work, school, shopping, etc.
   a. Never
   b. Weekly
   c. Couple times per week
   d. Daily
   e. Multiple times per day

   IF NOT (a. Never), THEN
   1.1. What time of day do you see deer?
   Please select all that apply
   □ Morning
   □ Day
   □ Evening
   □ Night

1.2. What are the deer doing when you see them?

Please select all that apply

- □ Standing/looking around
- □ Walking or running
- □ Eating
- □ Laying down
- □ Running away
- □ Drinking water

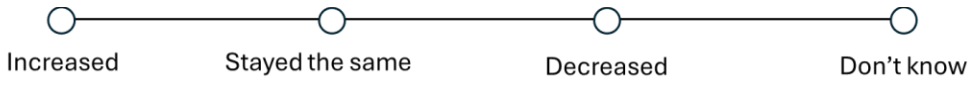
2. Please select any of the following concerns you have about deer in the area you live and work.

If none, please skip this question.

- □ Deer/vehicle accidents
- □ Damage to landscaping
- □ Aggressive deer
- □ Damage to native ecosystems
- □ Decline in deer health
- □ Ticks/disease

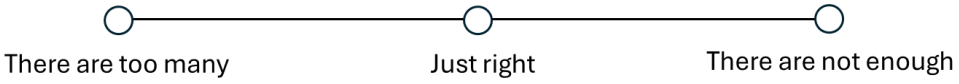
3. Which statement best describes your feelings about deer?
   a. I enjoy seeing and having deer around
   b. I enjoy seeing deer, but have some concerns
   c. I generally regard deer as a nuisance
   d. I have no specific feelings about deer

4. In the past 3 years, how do you think the deer population has changed in the area where you live and work?



5. How would you describe the number of deer around your home?

Please select the answer that best fits.



6. What city or township do you live in? (Select from drop-down list)

This allows your responses to be grouped with other responses from your area.

A-1.2. Survey responses by Kent County municipality respondent location , showing the number of responses from each jurisdiction and the proportion each represents of the overall survey sample.

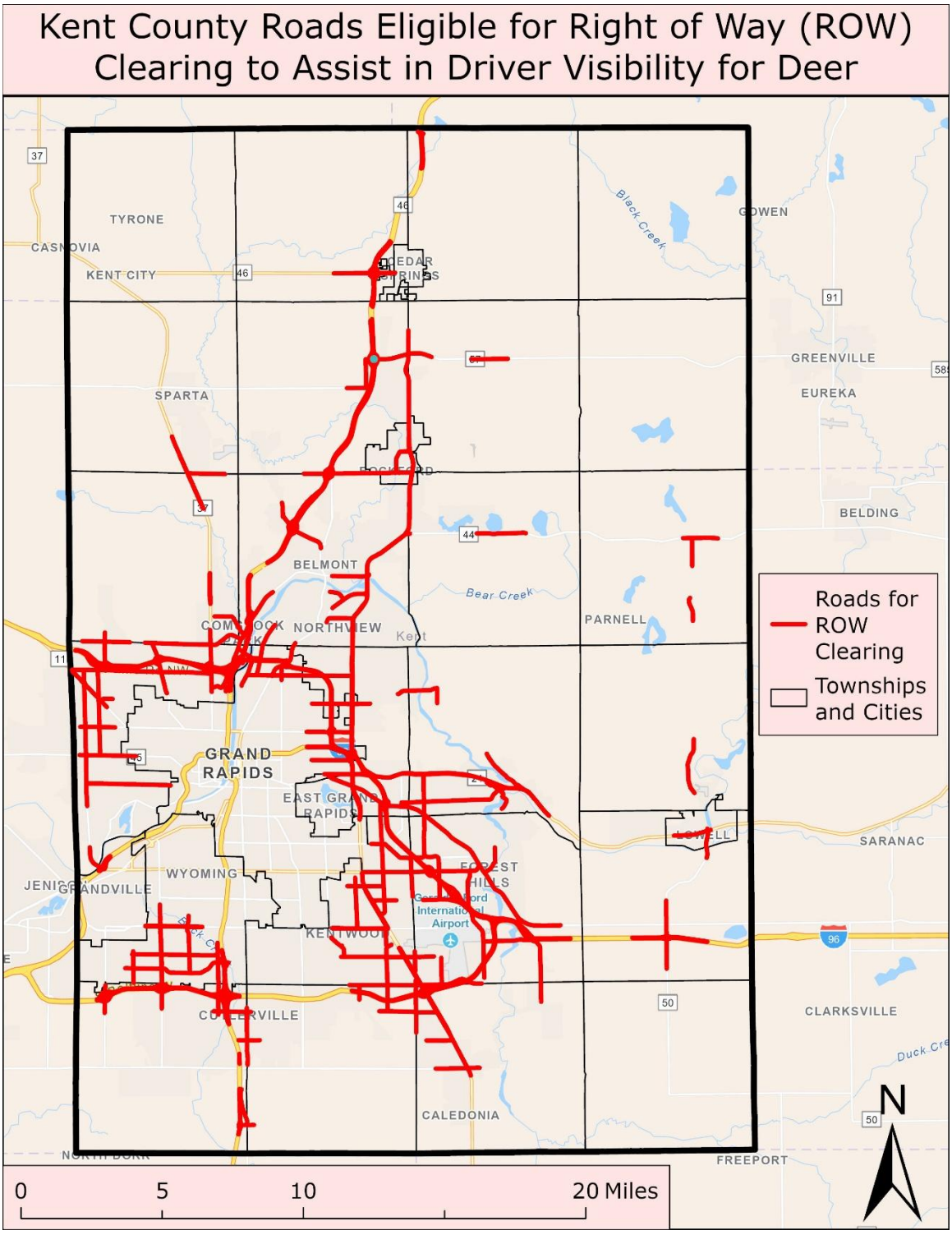
While all Kent County municipalities are represented in the data, response rates varied considerably across locations. Margin of error (MOE) estimates compare the number of survey responses to Census Bureau population estimates for each location, providing an indication of how precisely the survey results reflect the views of residents within each jurisdiction. Municipalities with smaller MOE values (e.g., less than 7) have more precise estimates, while those with larger MOE values should be interpreted more cautiously as the true values may fall within a wider range around the reported estimate.

Jurisdiction	n	% of Total	MOE
Ada Township	346	5.2	5
Algoma Township	85	1.3	11
Alpine Township	67	1	12
Bowne Township	43	0.6	15
Byron Township	102	1.5	10
Caldonia Township	179	2.7	10
Cannon Township	175	2.6	7
Cascade Township	494	7.4	4
City of Cedar Springs	16	0.2	24
City of East Grand Rapids	118	1.8	9
City of Grand Rapids	2,146	32.2	2
City of Grandville	132	2	8
City of Kentwood	382	5.7	5
City of Lowell	33	0.5	17
City of Rockford	88	1.3	10
City of Walker	478	7.2	4
City of Wyoming	448	6.7	5
Courtland Township	137	2.1	8
Gaines Township	124	1.9	9
Grand Rapids Township	266	4	6
Grattan Township	53	0.8	13
Lowell Township	73	1.1	11
Nelson Township	20	0.3	22
Oakfield Township	37	0.6	16
Plainfield Township	439	6.6	5
Solon Township	27	0.4	19
Sparta Township	42	0.6	15

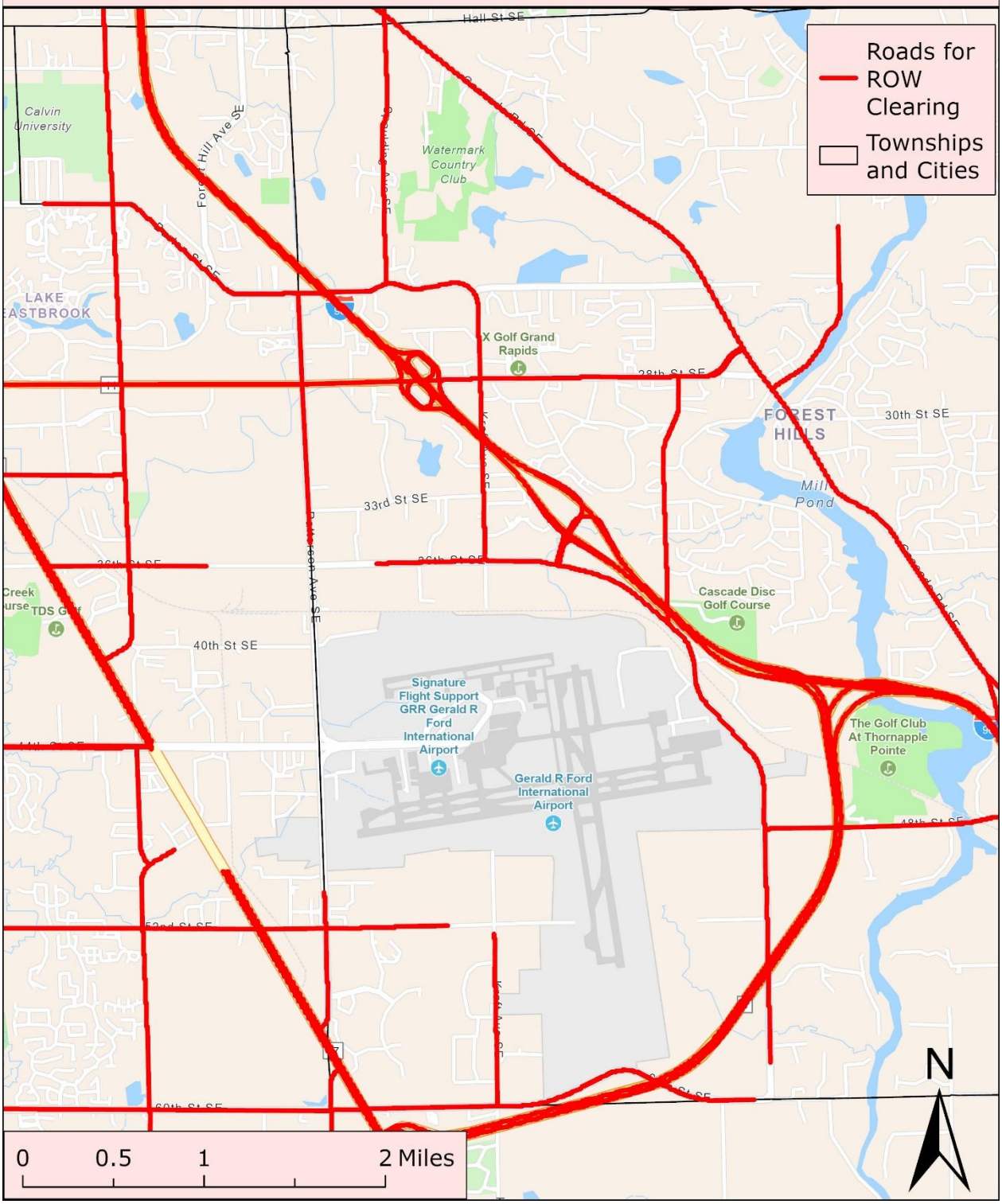
Spencer Township	22	0.3	21
Tyrone Township	32	0.5	17
Vergennes Township	61	0.9	12
Not disclosed	2	--	--
Total	**6,667**	**100**	**--**

Appendix 2. Maps depicting high-traffic and high-speed roads in Kent County that intersect areas with patterns of very high and extreme numbers of vehicle-deer collisions.

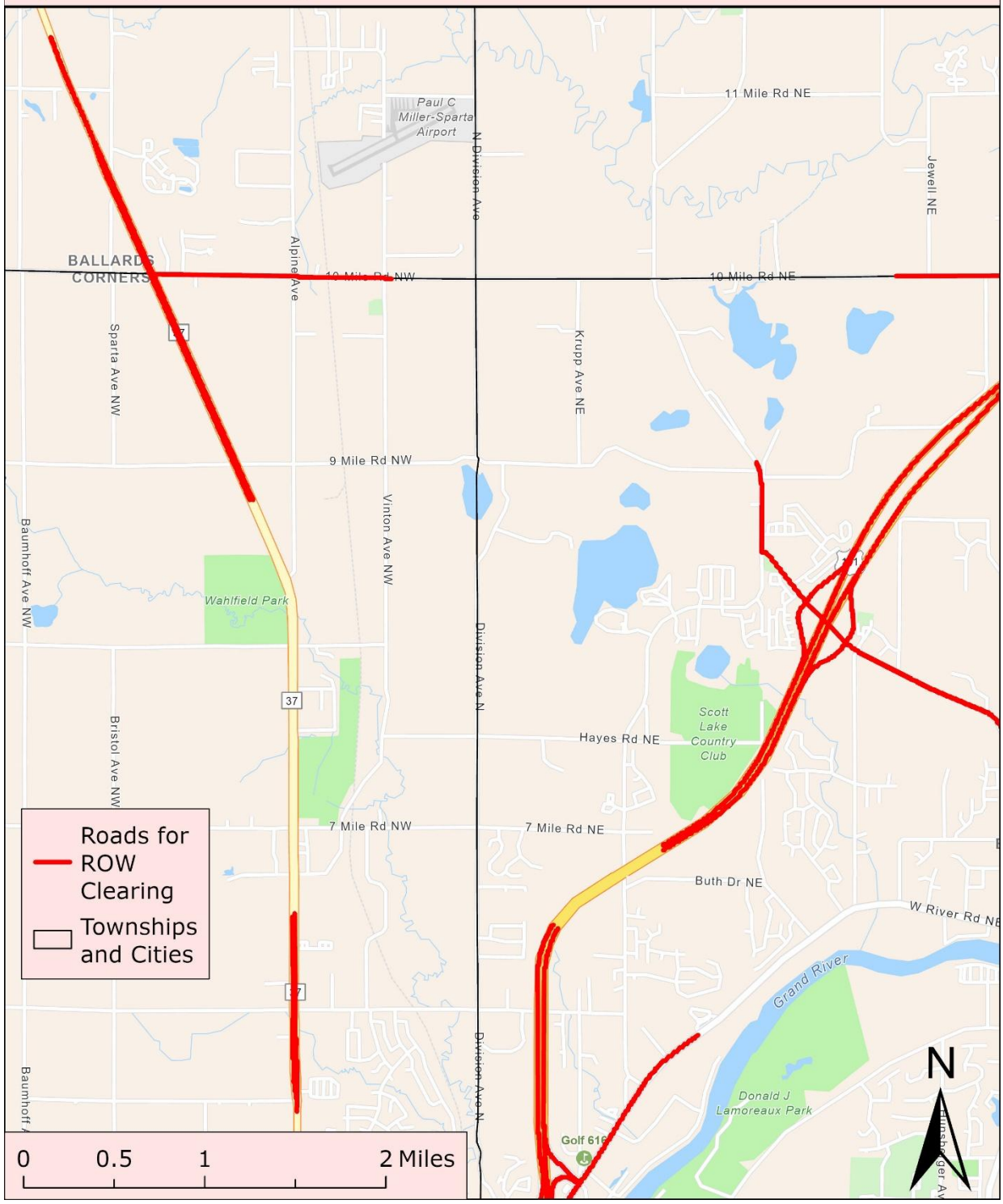
<u>The maps are in the following order:</u>
Overview map of Kent County roads
Airport
Alpine/Plainfield Twp
Byron Twp
Cannon Twp
Courtland Twp
Cedar Springs
Grattan Twp
I-96 Area
Kentwood
Lowell
M-21 & Ada Twp
M-37 & Thornapple River Area
Plainfield Twp
Vergennes Twp
Walker
Wyoming & Grandville

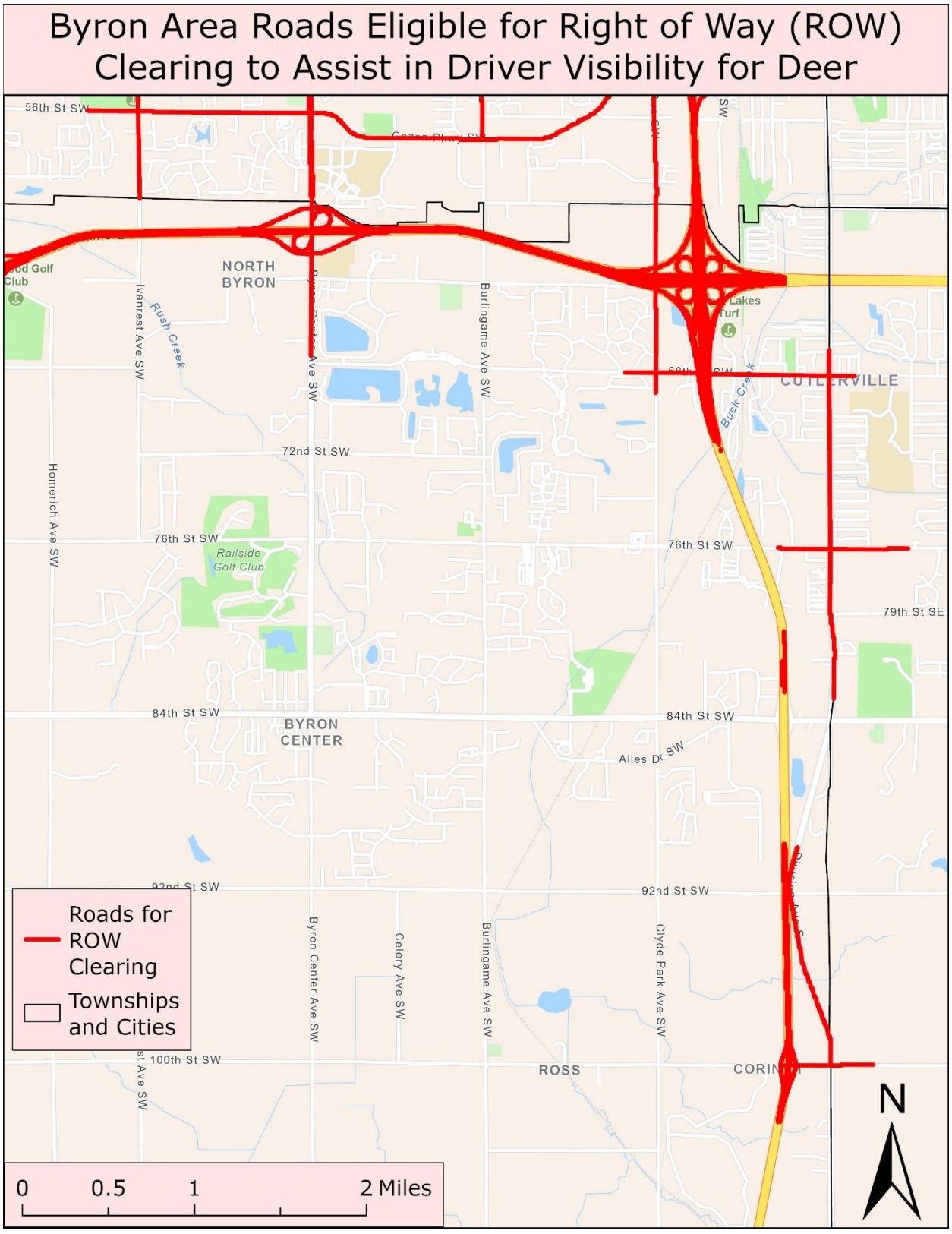

Kent County Roads Eligible for Right of Way (ROW) Clearing to Assist in Driver Visibility for Deer
TYRONE
CASNOVIA
KENT CITY
SPARTA
CEDAR SPRINGS
GOWEN
GREENVILLE
EUREKA
BELDING
BELMONT
NORTHVIEW
Bear Creek
PARNELL
GRAND RAPIDS
EAST GRAND RAPIDS
WYOMING
GRANDVILLE
KENTWOOD
FOREST HILLS
Gerald R. Ford International Airport
LOWELL
SARANAC
CLARKSVILLE
CALEDONIA
FREEPORT
Roads for ROW Clearing
Townships and Cities
0
5
10
20 Miles
N

Airport Area Roads Eligible for Right of Way (ROW) Clearing to Assist in Driver Visibility for Deer

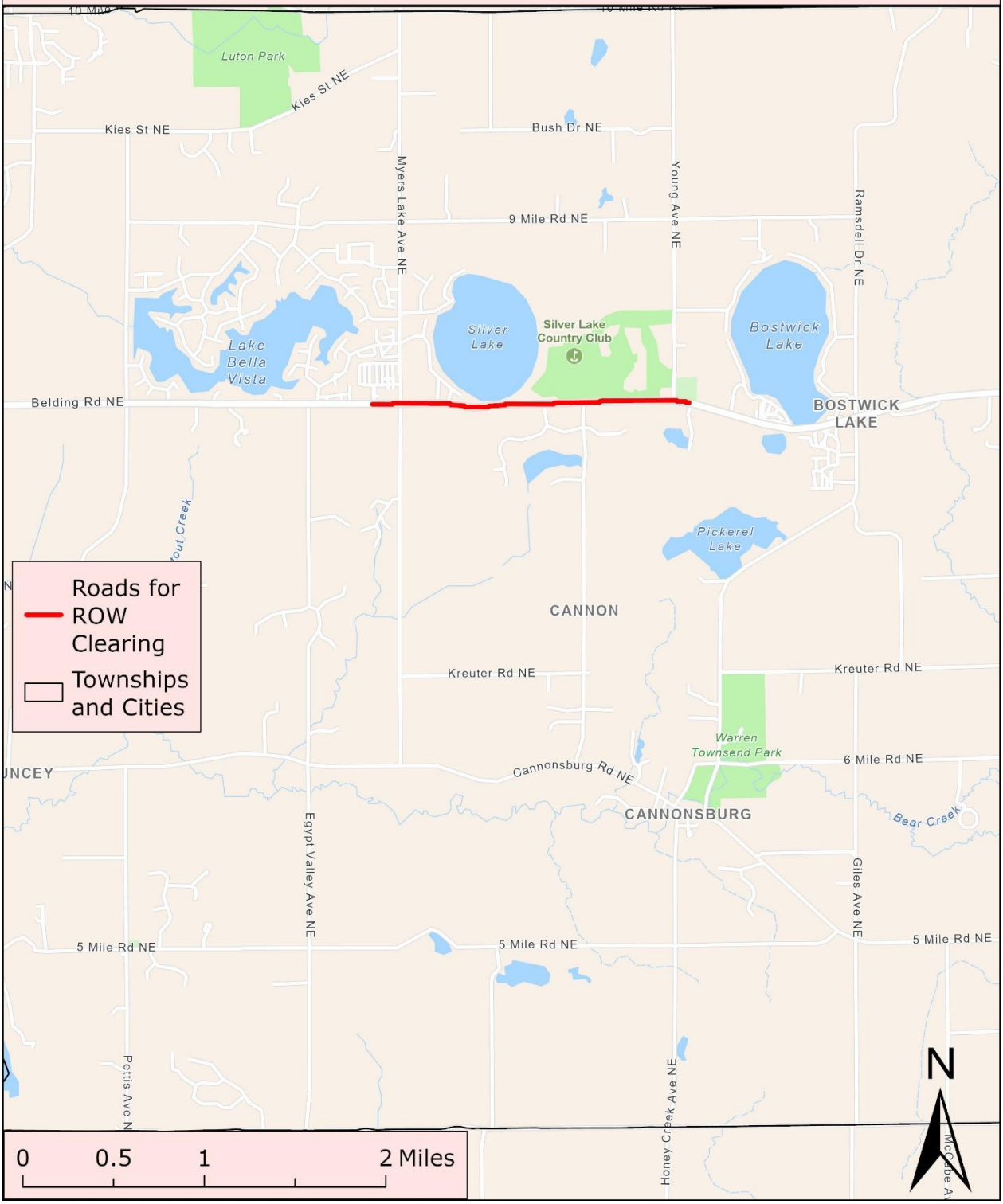


Alpine/Plainfield Area Roads Eligible for Right of Way (ROW) Clearing to Assist in Driver Visibility for Deer

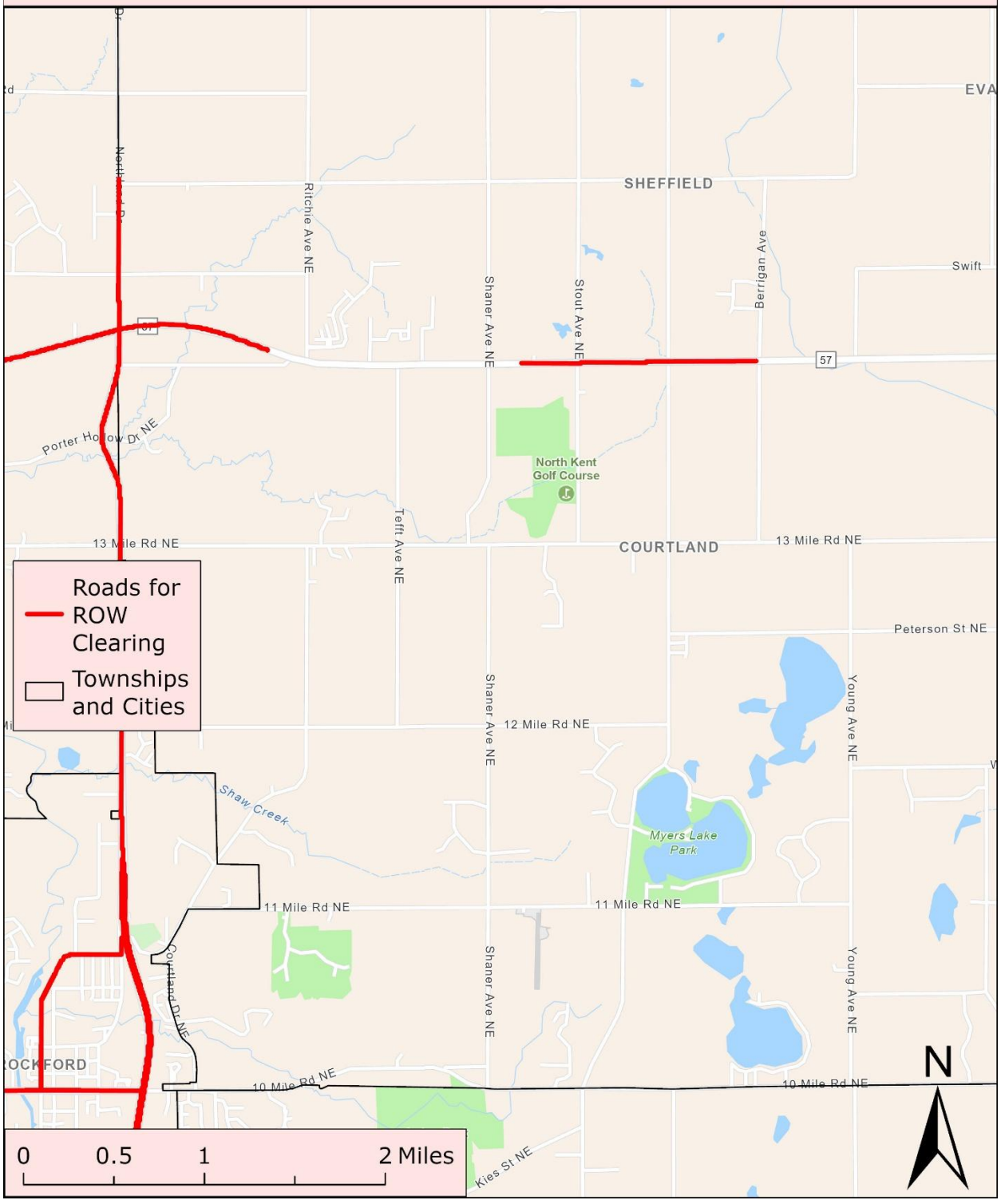



Byron Area Roads Eligible for Right of Way (ROW) Clearing to Assist in Driver Visibility for Deer
56th St SW
NORTH BYRON
Ivanrest Ave SW
Rush Creek
Byron Center Ave SW
Burlingame Ave SW
Lakes
Turf
CUTLERVILLE
Buck Creek
72nd St SW
Homerich Ave SW
76th St SW
Railside Golf Club
76th St SW
79th St SE
84th St SW
BYRON CENTER
84th St SW
Alles D SW
92nd St SW
92nd St SW
Byron Center Ave SW
Celery Ave SW
Burlingame Ave SW
Clyde Park Ave SW
100th St SW
ROSS
Roads for ROW Clearing
Townships and Cities
0
0.5
1
2 Miles
N

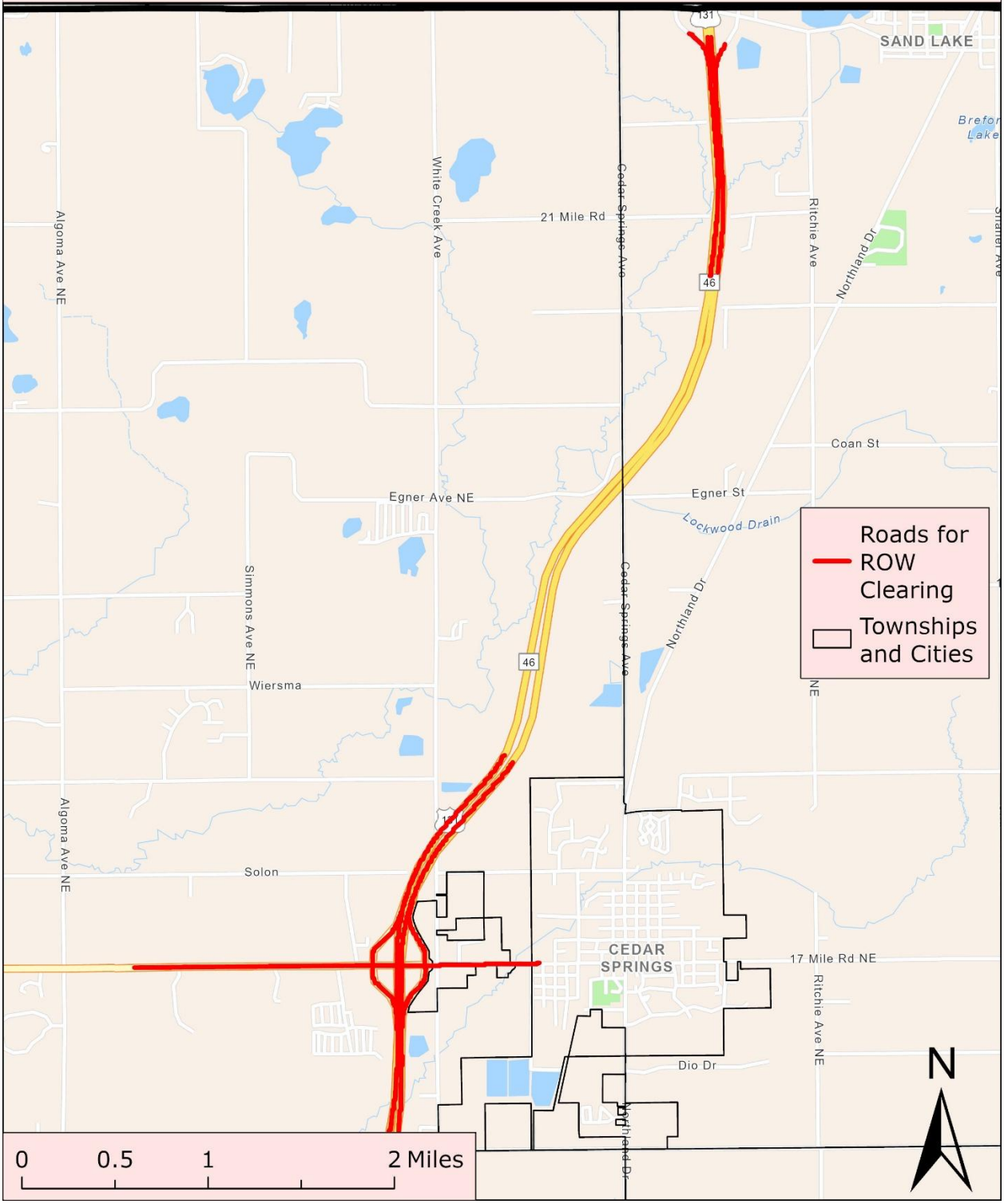
Cannonsburg Area Roads Eligible for Right of Way (ROW) Clearing to Assist in Driver Visibility for Deer



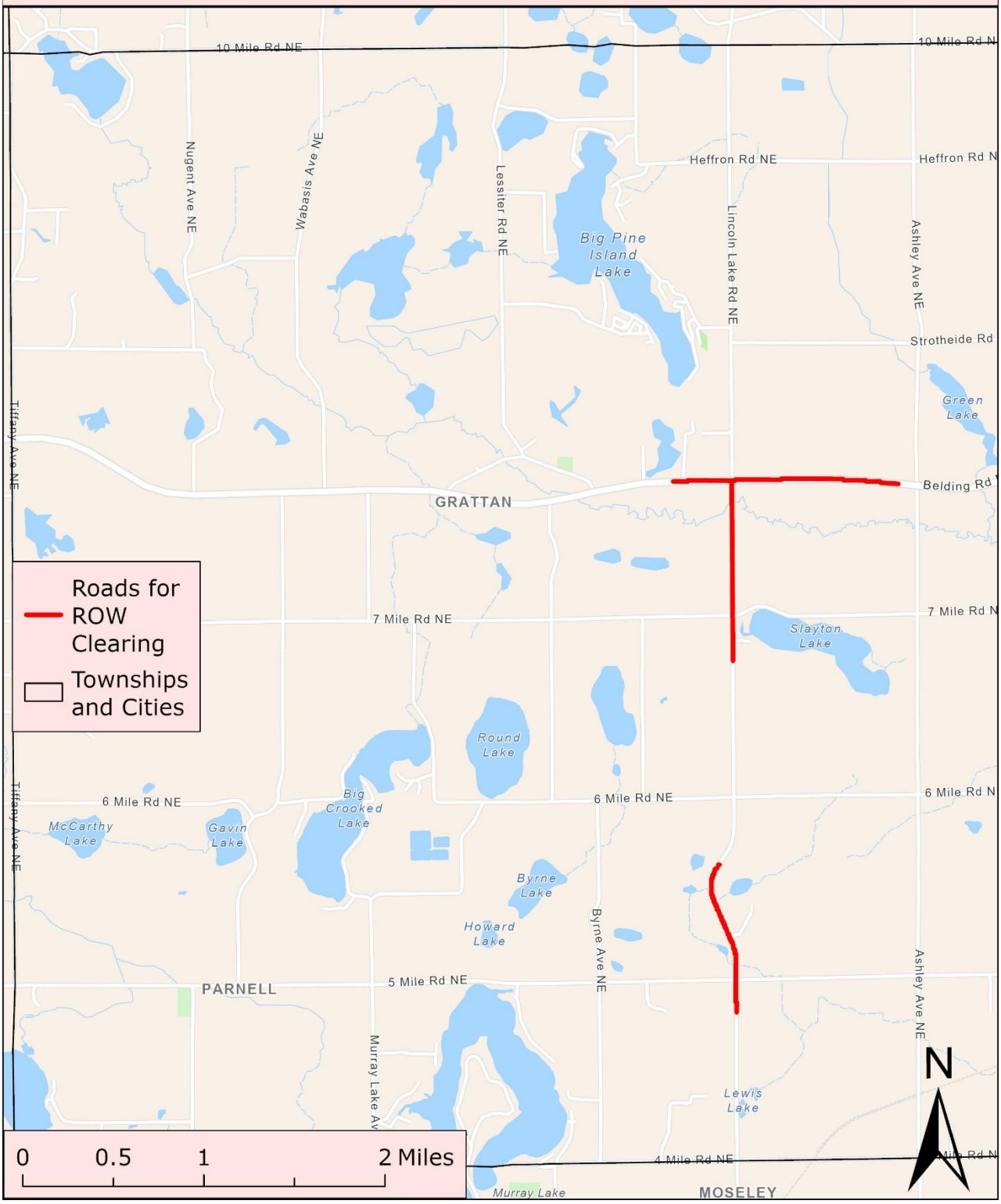
Courtland Area Roads Eligible for Right of Way (ROW) Clearing to Assist in Driver Visibility for Deer



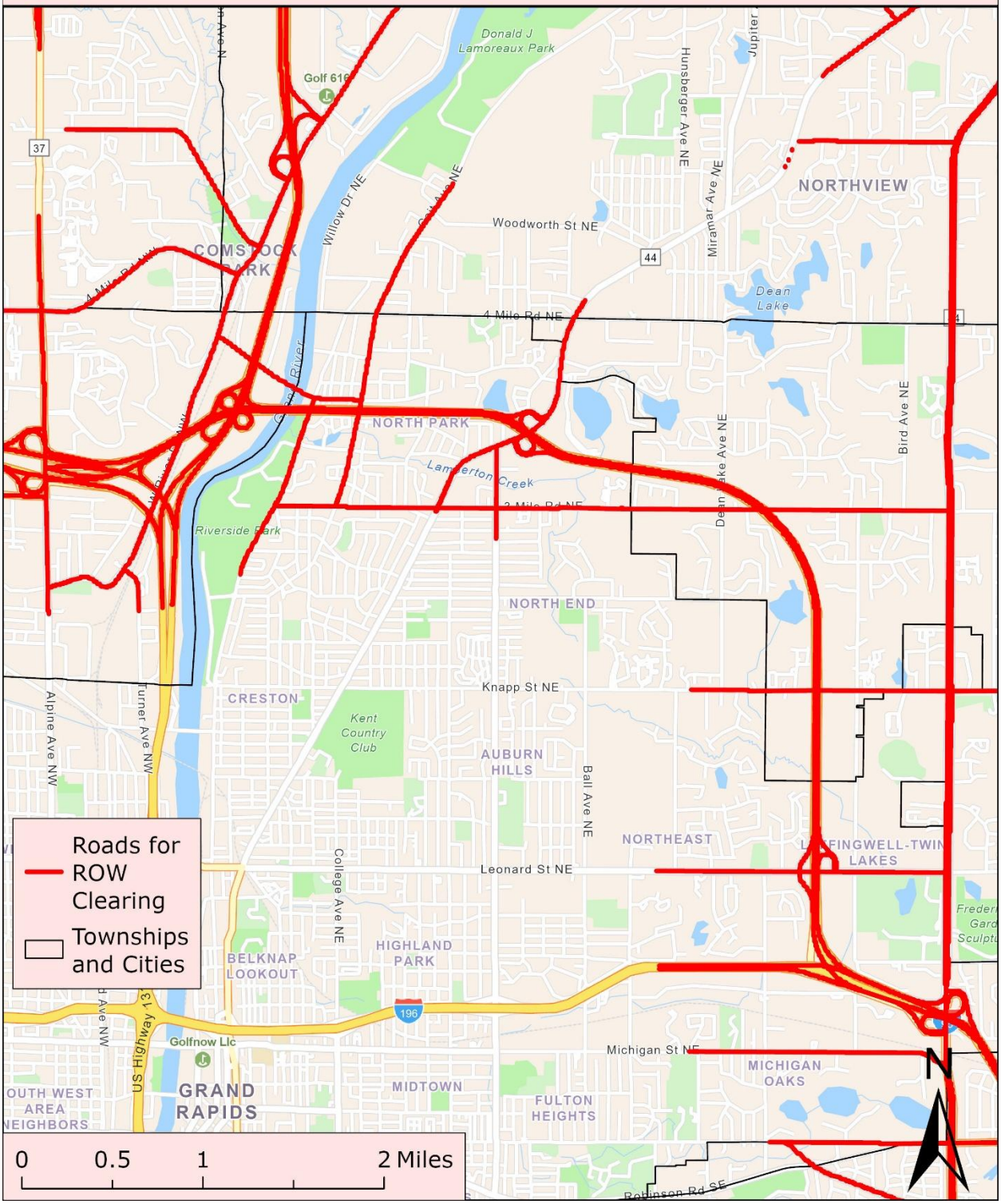
Cedar Springs Area Roads Eligible for Right of Way (ROW) Clearing to Assist in Driver Visibility for Deer



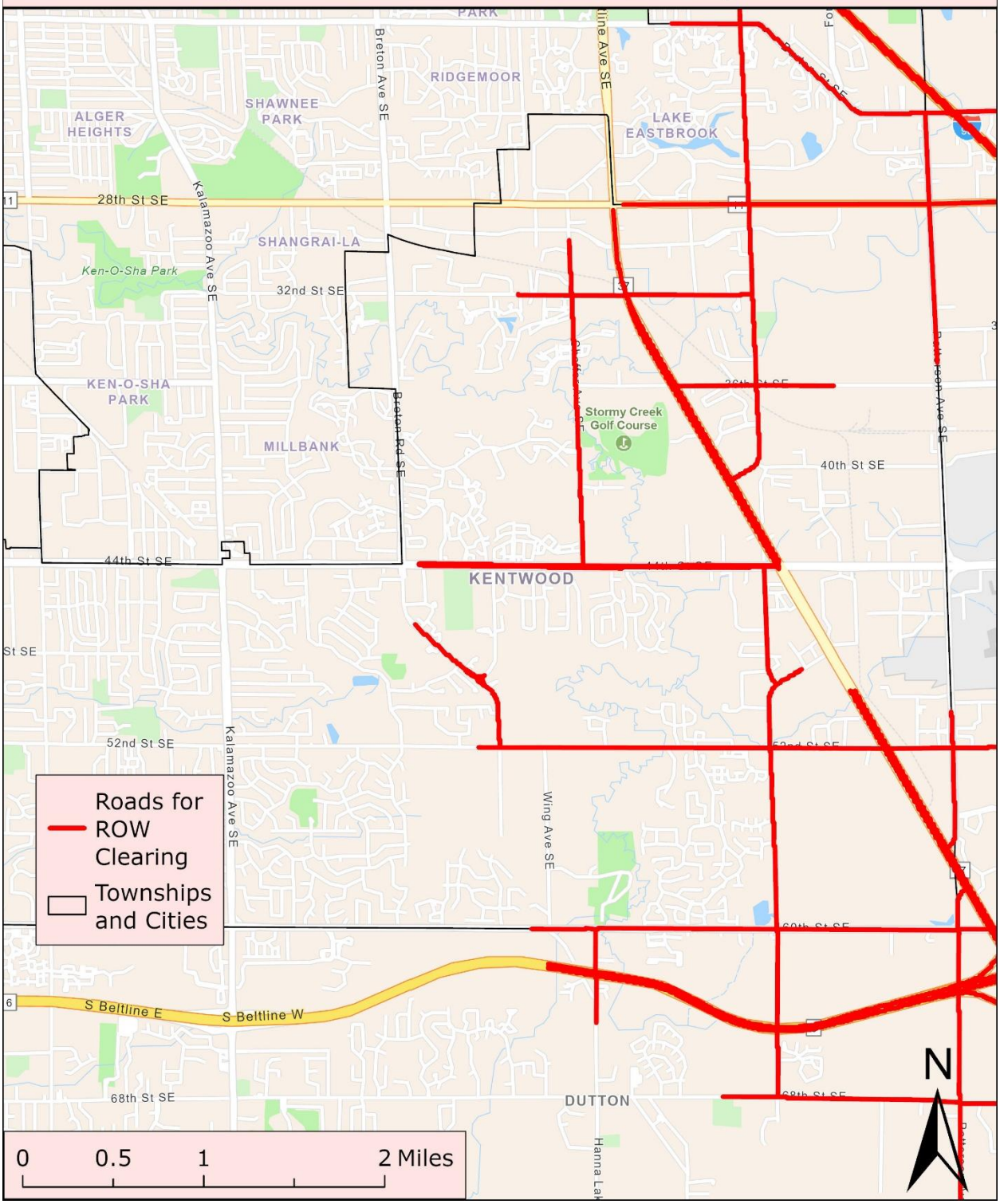
Grattan Area Roads Eligible for Right of Way (ROW) Clearing to Assist in Driver Visibility for Deer



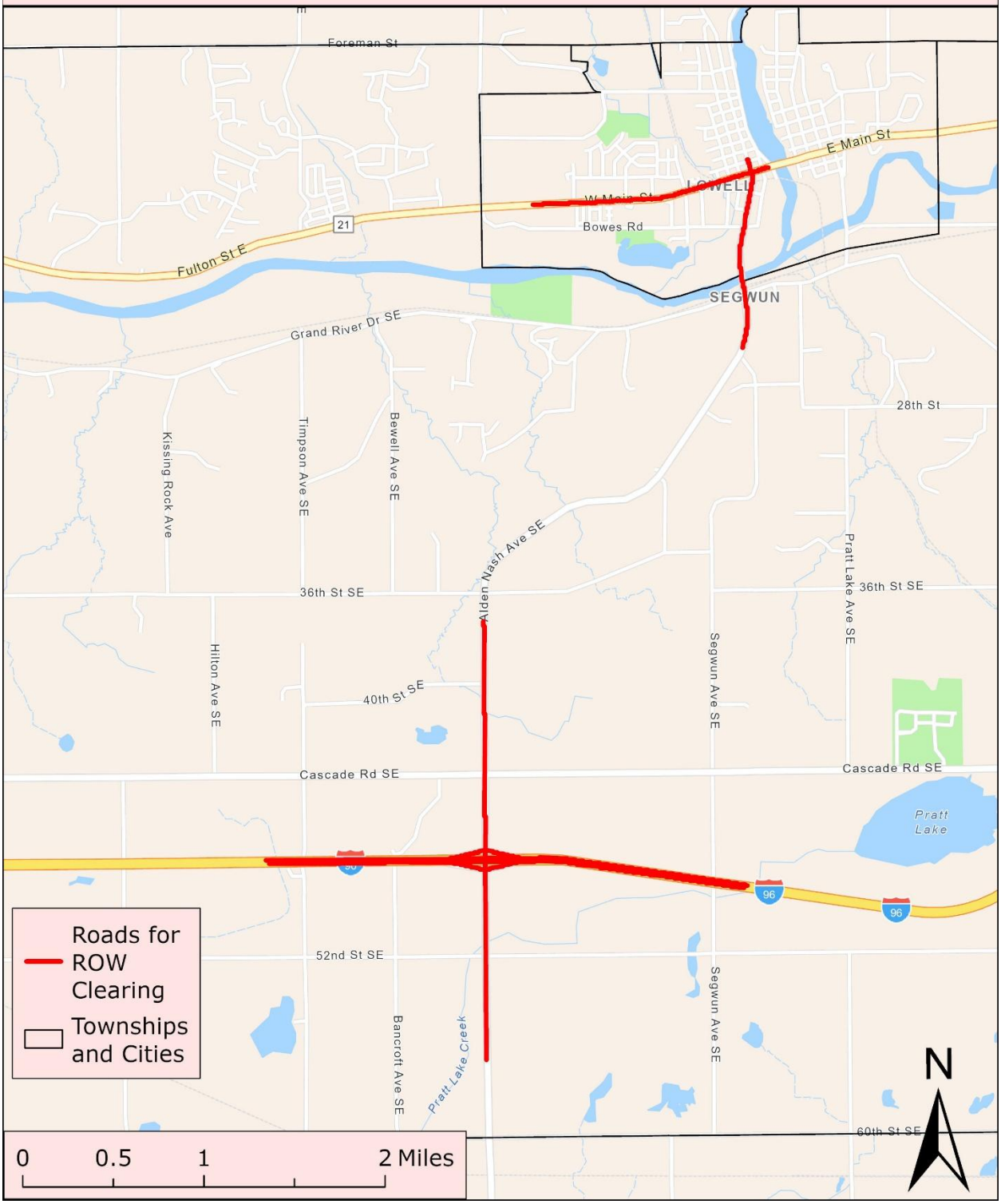
I-96 Area Roads Eligible for Right of Way (ROW) Clearing to Assist in Driver Visibility for Deer

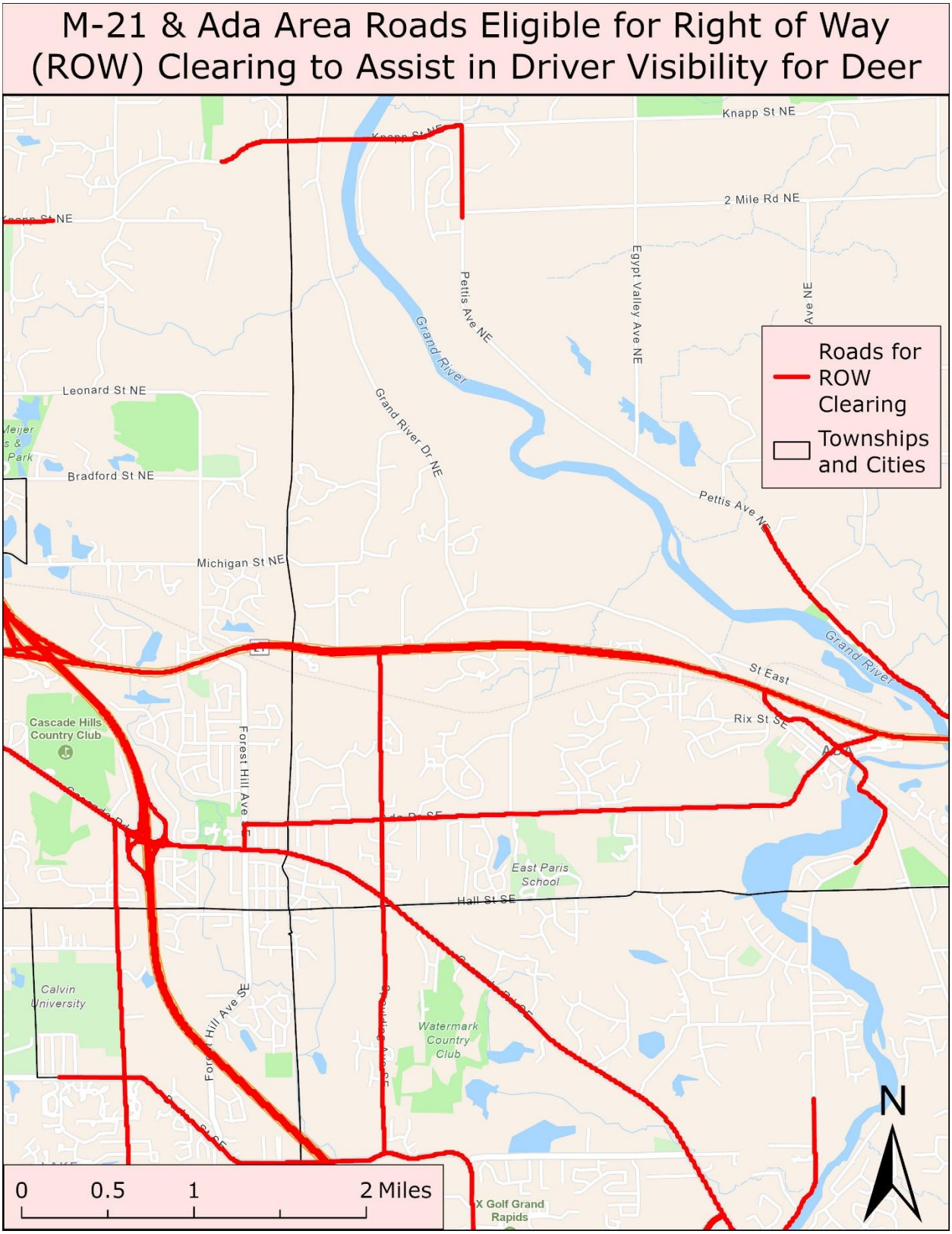


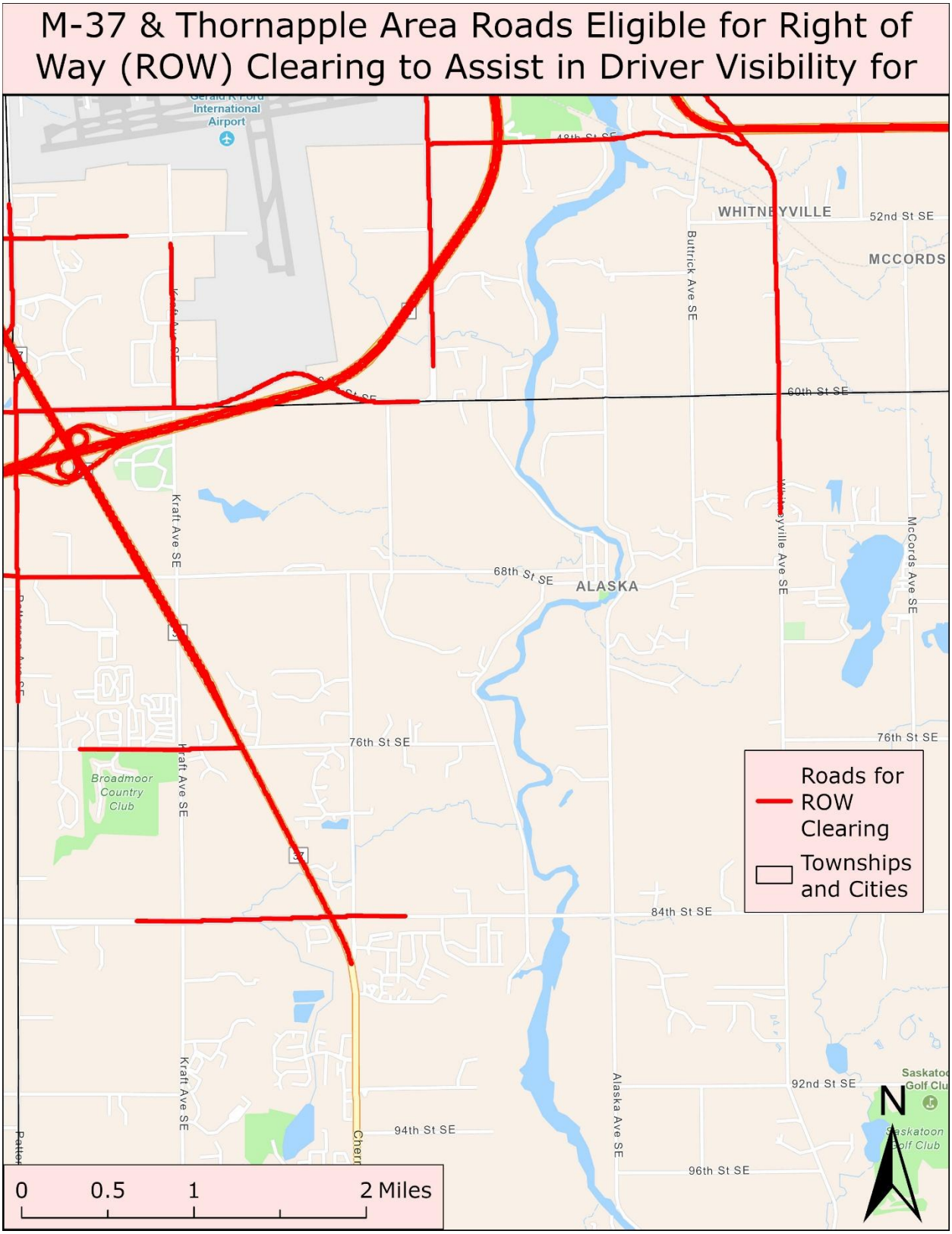
Kentwood Area Roads Eligible for Right of Way (ROW) Clearing to Assist in Driver Visibility for Deer

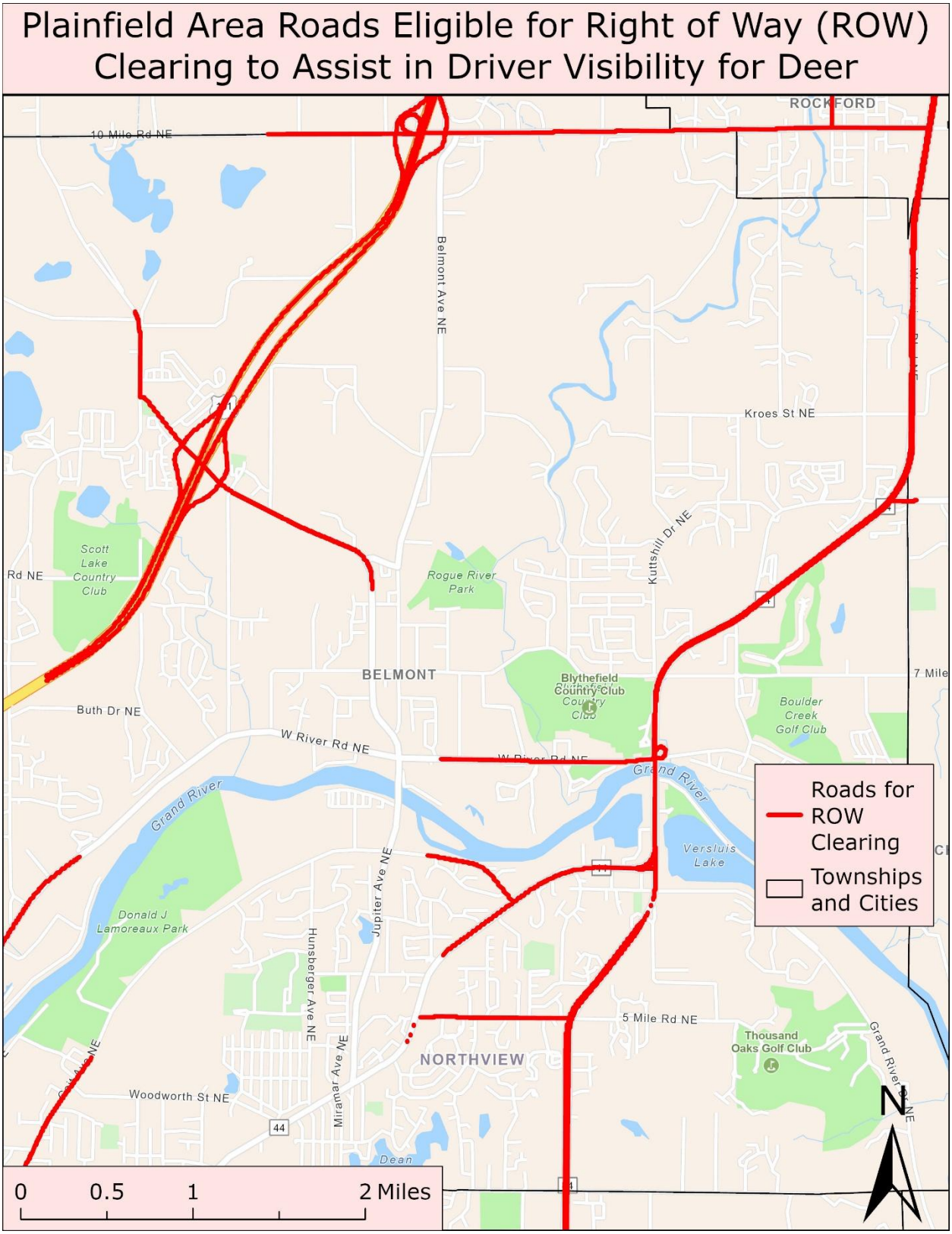


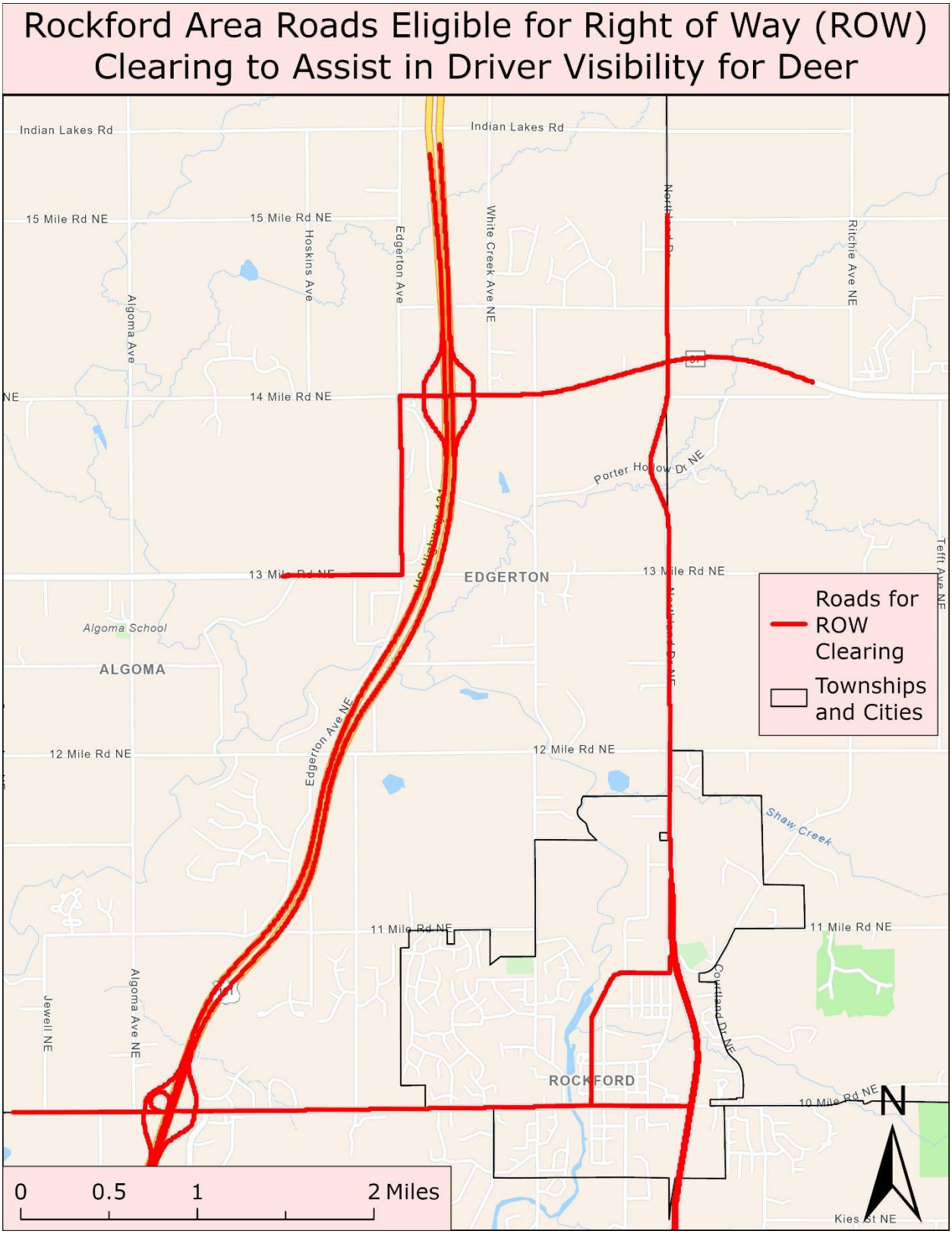
Lowell Area Roads Eligible for Right of Way (ROW) Clearing to Assist in Driver Visibility for Deer



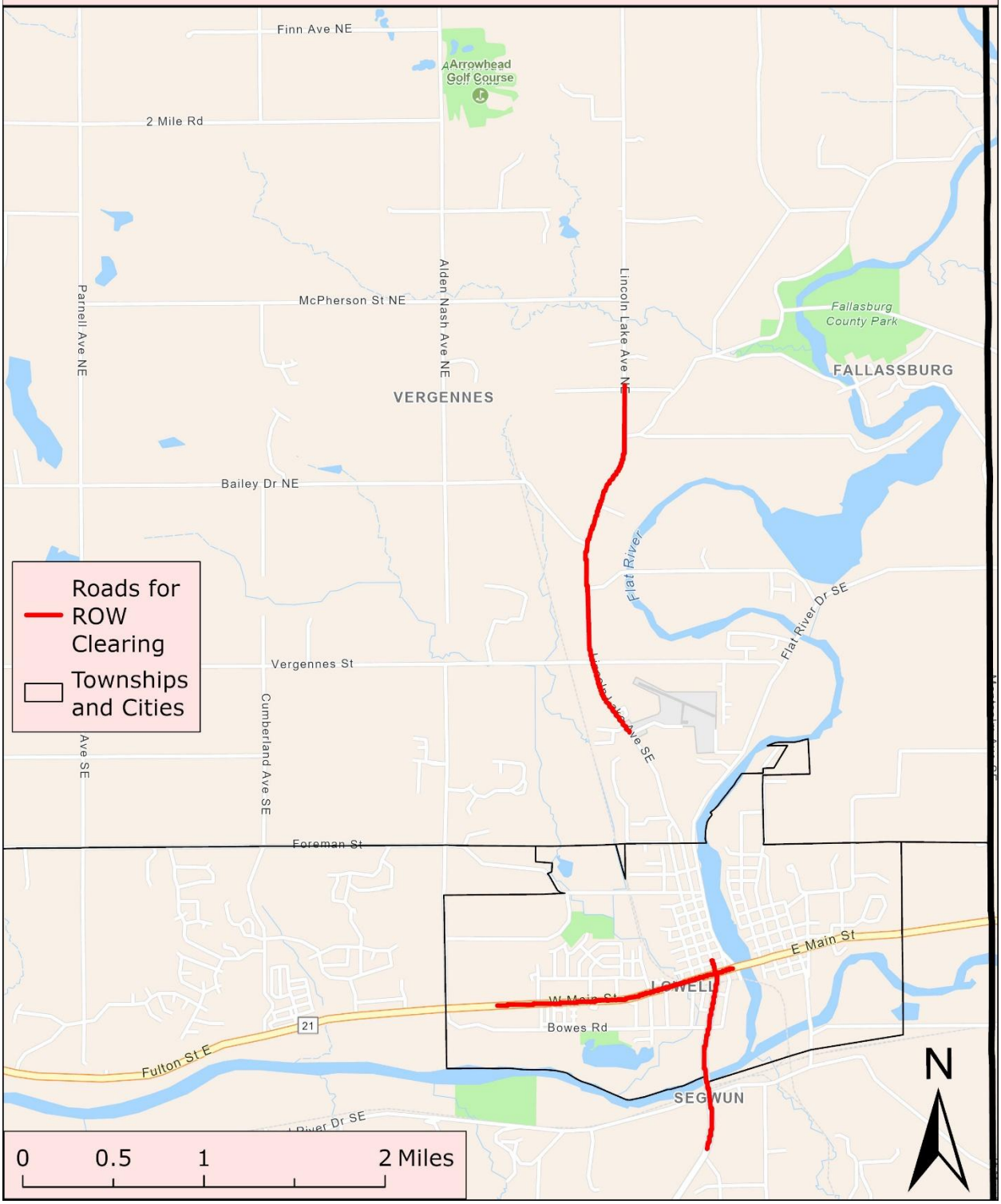

M-21 & Ada Area Roads Eligible for Right of Way (ROW) Clearing to Assist in Driver Visibility for Deer
Knapp St NE
2 Mile Rd NE
Pettis Ave NE
Egypt Valley Ave NE
Grand River
Grand River Dr NE
Leonard St NE
Bradford St NE
Michigan St NE
Pettis Ave NE
Grand River
St East
Rix St SE
Cascade Hills Country Club
Forest Hill Ave SE
East Paris School
Hall St SE
Calvin University
Watermark Country Club
Roads for ROW Clearing
Townships and Cities
N
0
0.5
1
2 Miles

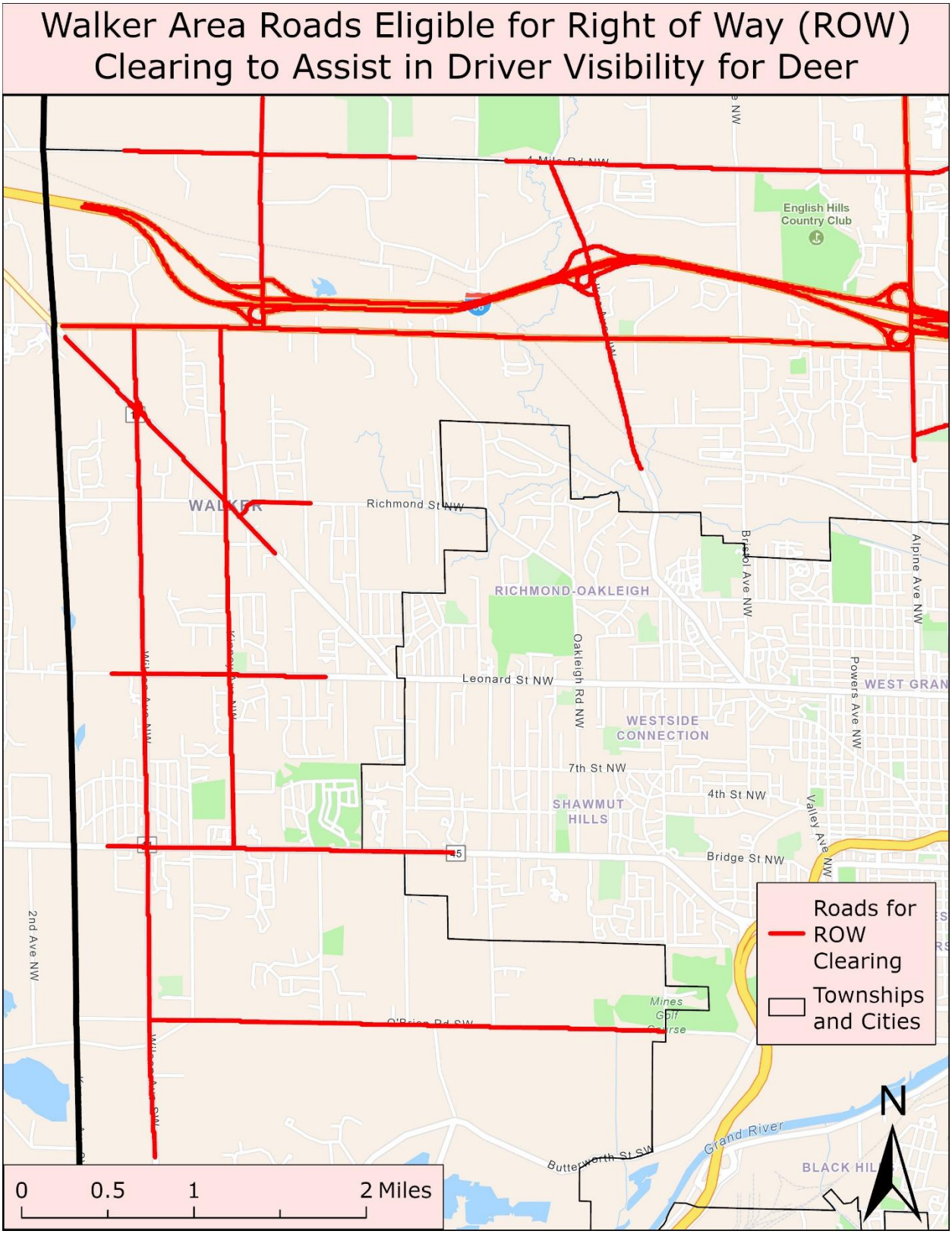

M-37 & Thornapple Area Roads Eligible for Right of Way (ROW) Clearing to Assist in Driver Visibility for
Gerald R Ford International Airport
WHITNEYVILLE
52nd St SE
MCCORDS
Buttrick Ave SE
60th St SE
Kraft Ave SE
68th St SE
ALASKA
Whitneyville Ave SE
McCords Ave SE
76th St SE
Broadmoor Country Club
84th St SE
92nd St SE
94th St SE
96th St SE
Alaska Ave SE
Roads for ROW Clearing
Townships and Cities
N
0
0.5
1
2 Miles


Plainfield Area Roads Eligible for Right of Way (ROW) Clearing to Assist in Driver Visibility for Deer
ROCKFORD
10 Mile Rd NE
Belmont Ave NE
Kroes St NE
Kuttshill Dr NE
Scott Lake Country Club
Rogue River Park
BELMONT
Blythefield Country Club
Boulder Creek Golf Club
7 Mile
Buth Dr NE
W River Rd NE
Grand River
Versluis Lake
Donald J Lamoreaux Park
Jupiter Ave NE
Hunsberger Ave NE
Miramar Ave NE
5 Mile Rd NE
Thousand Oaks Golf Club
NORTHVIEW
Woodworth St NE
Dean
Roads for ROW Clearing
Townships and Cities
0 0.5 1 2 Miles
N


Rockford Area Roads Eligible for Right of Way (ROW) Clearing to Assist in Driver Visibility for Deer
Indian Lakes Rd
Indian Lakes Rd
15 Mile Rd NE
15 Mile Rd NE
Hoskins Ave
Edgerton Ave
White Creek Ave NE
Ritchie Ave NE
Algoma Ave
14 Mile Rd NE
Porter Hollow Dr NE
13 Mile Rd NE
EDGERTON
13 Mile Rd NE
Algoma School
ALGOMA
Edgerton Ave NE
12 Mile Rd NE
12 Mile Rd NE
Shaw Creek
11 Mile Rd NE
11 Mile Rd NE
Jewell NE
Algoma Ave NE
Courtland Dr NE
ROCKFORD
10 Mile Rd NE
Kies St NE
Roads for ROW Clearing
Townships and Cities
N
0
0.5
1
2 Miles

Vergennes Area Roads Eligible for Right of Way (ROW) Clearing to Assist in Driver Visibility for Deer




Walker Area Roads Eligible for Right of Way (ROW) Clearing to Assist in Driver Visibility for Deer
English Hills Country Club
WALKER
Richmond St NW
RICHMOND-OAKLEIGH
Leonard St NW
WESTSIDE CONNECTION
7th St NW
4th St NW
SHAWMUT HILLS
Bridge St NW
Oakleigh Rd NW
Bristol Ave NW
Alpine Ave NW
Powers Ave NW
Valley Ave NW
2nd Ave NW
Mines Golf Course
Grand River
Butterworth St SW
BLACK HILL
Roads for ROW Clearing
Townships and Cities
N
0
0.5
1
2 Miles

Wyoming Area Roads Eligible for Right of Way (ROW) Clearing to Assist in Driver Visibility for Deer