2012

Deer Management Plan

City of Solon

A comprehensive plan addressing resident and ecological concerns while necessitating efficient and effective herd management

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OVERVIEW

In the early 1900's there were very few whitetail deer within the State of Ohio. Beginning in 1930 deer migrated back into our area and began to repopulate. In 1970, the herd was estimated at 17,000 and the Ohio Division of Wildlife was actively managing the herd numbers through hunting regulations. In the past thirty years the deer population has exploded and is now estimated at 750,000 animals statewide. Approximately 250,000 animals are harvested each year during the state hunting season and another 25,000 to 30,000 are involved in reported deer vehicle accidents. Each area of the State has its own unique challenges in dealing with these numbers and our City is no different.

The City of Solon is located in southeast Cuyahoga County, and is comprised of 20.6 square miles or approximately 13,400 acres. At this point, the City is nearly fully developed and has a population of 23,348. The attached zoning map (Appendix 1-A) indicates that a significant portion of the City's southwest quadrant contains industrial properties while commercial and institutional areas are concentrated primarily near the center of town. Green areas are scattered throughout the City including the South Chagrin Reservation, managed by the Cleveland Metroparks, three (3) eighteen hole golf courses, and two large areas of protected land, the Blue Herron Rookery and the North Branch Preserve. The remainder of the City was developed for residential housing with varying lot sizes.

The City of Solon first implemented a Deer Management Program in the year 2005. This program was deemed necessary due to an increasing white-tailed deer herd, resulting in an increase in deer vehicle accidents (DVA), peaking at 170 incidents in 2003. In addition, the City was receiving numerous complaints relating to property damage from deer activity. An aerial survey conducted in 2004 indicated 922 deer within the City borders, with an additional 120 deer in nearby Glenwillow with potential for crossover. At that time, Solon City Council implemented our initial Deer Management Program consisting primarily of culling by contracted sharpshooters in designated areas and the installation of the "streiter lite" systems in two selected areas. During the winter of 2005, 602 deer were removed by sharpshooters. This effort was successful in reducing both the herd and DVA. In 2006, an additional 400 deer were removed and the DVA continued to decrease. In 2007, 150 deer were removed, in 2008 175 deer were removed and in 2009 another 250 deer were removed. A deer count performed by the City's animal warden, in the fall of 2009, estimated the herd at approximately 450 and the DVA had been reduced to 45. During the fall of 2009 and 2010 the City performed no removal of deer and subsequently the herd increased by count of the animal warden to 694 and the DVA increased to 64. In 2011 the herd increases to 724 and the DVA increased to 105. The purpose of this plan is to put forth a program that will maintain the deer population at a level which is acceptable from a safety and nuisance perspective. This information is represented in Table 1-A.

DEER VEHICLE ACCIDENTS

Most deer-vehicle collisions occur between October and December during the deer-breeding season. According to data from the Ohio Department of Public Safety and ODNR, peak hours for these collisions in 2004 occurred between 6:00-7:00 p.m. followed by 6:00-7:00 a.m. Defensive driving should be promoted during these peak periods daily and seasonally. It should also be emphasized that deer often travel in family groups, and motorists should anticipate other deer near the roadside if one animal is observed.[1]

There are several techniques available to reduce deer vehicle collisions; however, few have been documented as consistently effective.

1. Roadside Reflectors – Reflectors have produced varying success and work by reflecting light from car headlights. This creates a wall of light that shines parallel to the road possibly discouraging the approach of deer. Deer, in residential areas, may respond less favorably to reflectors than rural deer, as suburban deer are more likely accustomed to human activity and lights. The City of Solon has installed the streiter lite systems in several selected areas within the City. These systems will continue to be maintained.

2. Wildlife Whistles – These products attach to cars and produce a noise that is intended to warn animals of approaching vehicles. There is no research that indicates the deer are frightened by a particular frequency or decibel level of sound. It appears wildlife warning whistles are not alarming to deer and not loud enough to be heard above the engine noise associated with moving vehicles. Studies have shown that wildlife whistles have not been effective in reducing deer-vehicle collisions.

3. Warning Signs – Roadways with relatively high deer activity are often marked with warning signs in an attempt to reduce vehicle accidents. Motorists generally disregard these signs. Unless an individual experiences deer in conjunction with the signs, they do not respond to future warnings.

4. Fencing – Highway departments install fencing along roadsides for many reasons in addition to preventing deer-vehicle collisions. The effectiveness of a fence along a roadway is very limited unless properly maintained “deer-proof” fences are installed. Height is the major consideration as a fence must be eight (8) feet high to prevent deer from jumping the fence. Breaks or erosion gullies must be immediately repaired as these quickly become areas for deer to cross highways. The use of fences in the City would not be practical in most areas.

[1] Appendix 1-B illustrates deer vehicle accidents by year and location since 2004
Table 2-A details deer vehicle accident totals from 1994 through 2011

PUBLIC INFORMATION AND EDUCATION

The management of a deer herd is a highly sensitive issue. The City must emphasize the positive benefits of a stable, managed herd, while openly communicating the action plan and goals. Local newspapers and the City website will be effective tools in this effort.

MONITORING ACTIONS AND RECOMMENDATIONS

Any management plan requires monitoring. Monitoring provides essential information about the baseline (where we are presently and whether we have made positive progress towards our goals). The results of this process will help us identify where problems still exist and allow us to focus our efforts in those areas. Monitoring will be accomplished by:

1. Citizen Complaints – Residential complaints received by the City will be entered into a database to be utilized in monitoring progress of selected control methods and providing guidance in recommending modifications. Complaints of deer damage or traffic related issues can be made directly to the Public Works office or by utilizing the Deer Damage Report[2] on the City's website. This information will be provided to Ohio Department of Natural Resources Division of Wildlife personnel.

2. Annual Deer Count – Currently the City is utilizing its animal warden performing ground counts each year. These counts are performed at the same time each year, utilizing the same methods. The City is currently investigating the potential for aerial counts in the future. Annual deer counts are included in Table 2-A.

3. Harvested Animal Inventory – Pertinent data such as sex of deer, age (estimated), and weight should be logged on each animal harvested or removed by other means. Date, time and location will also be included.

4. Public Opinion Surveys – It will be beneficial to annually conduct public surveys regarding landscape, garden, and crop damage in addition to other citizen concerns.

MANAGEMENT ALTERNATIVES

Deer management is often undertaken to satisfy diverse needs and interests while solving conflicts. No single technique or strategy is universally acceptable or appropriate. The complexity of suburban deer issues and limitations of available techniques requires an integrated program. Many options are available for control and reduction, with specific advantages and disadvantages. Some are acceptable for more rural areas while some are unsuitable, from a safety standpoint, for a more urban setting.

[2] Appendix 1-D sample of Deer Damage Report available on the City's website

NON-LETHAL ALTERNATIVES

1. Habitat Modification – Deer adapt well to nearly all human-modified environments, except for downtown urban locations.

2. Ban on Deer Feeding – Supplemental feed can enhance reproductive rates, transmission of disease and encourage deer to concentrate in specific areas and make deer more tolerant of people. Feeding may also contribute to an artificially high deer population, especially during harsh winters. In 2005, Solon City Council passed Ordinance 2005-280 creating Code 618.127 prohibiting the feeding of deer. Regulations may reduce the number of people who feed deer, but these types of regulations are difficult to enforce unless a concerted effort is made.

3. Unpalatable Landscape Plantings – Deer are selective feeders; they forage on plants or plant parts with considerable discrimination. Their obvious preference for and apparent avoidance of certain plants can be an advantage. Costly browsing damage may be reduced or eliminated by planting less-preferred species or by establishing susceptible plants only in areas protected from deer. Under most circumstances, landscaping based on knowledge of deer feeding preferences can provide an alternative to the use of expensive chemical repellents and physical barriers. Whether or not a particular plant species will be eaten by deer depends on the deer's previous experience, nutritional needs, plant palatability, seasonal factors, weather conditions, and the availability of alternative foods. *Herd density is an extremely important factor in whether or not a particular plant species will be eaten. Basically, when enough deer are present they will eat almost anything.

The homeowner is cautioned that the deer-browsing resistance of any plant species may change due to fluctuation in deer populations, alternative food availability, and environmental factors. No plant species will be avoided by deer under all conditions.

Plants Rarely Damaged		
Barberry	Common Barberry	Paper Birch
Common Boxwood	Russian Olive	American Holly
Drooping Leucothoe	Colorado Blue Spruce	
Plants Seldom Damaged		
European White Birch	American Bittersweet	Red Osier Dogwood
Flowering Dogwood	Kousa Dogwood	English Hawthorn
Redvein Enkianthus	European Beech	Forsythia
Honey Locust	Chinese Holly	Inkberry
Chinese Junipers – green	Chinese Junipers – blue	Mountain Laurel
Beautybush	Norway Spruce	White Spruce
Austrian Pine	Pitch Pine	Mugo Pine
Red Pine	Scots Pine	Japanese Flowering Cherry
Corkscrew Willow	Common Sassafras	Common Lilac
Japanese Wisteria		

Plants Moderately Damaged		
White Fir	Paperback Maple	Red Maple
Silver Maple	Sugar Maple	Common Horse Chestnut
Trumpet Creeper	Downy / Allegheny Serviceberry	Japanese Flowering Quince
Panicled Dogwood	Smokebush	Cotoneaster
Cranberry Cotoneaster	Old-fashioned Weigela	Rockspray Cotoneaster
Japanese Cedar	Border Forsythia	Common Witchhazel
Rose of Sharon	Smooth Hydrangea	Climbing Hydrangea
Panicle Hydrangea	Japanese Holly	China Girl / Boy Holly
Easter Red Cedar	European Larch	Goldflame Honeysuckle
Privet	Saucer Magnolia	Dawn Redwood
Virginia Creeper	Sweet Mock Orange	Eastern White Pine
Bush Cinquefoil	Sweet Cherry	Douglas Fir
Firthorn	Bradford Callery Pear	Common Pear
White Oak	Chestnut Oak	Northern Red Oak
Deciduous Azaleas	Carolina Rhododendron	Rosebay Rhododendron
Staghorn Sumac	Multiflora Rose	Rugosa Rose
Willows	Anthony Waterer Spiraea	Bridalwreath Spiraea
Persian Lilac	Japanese Tree Lilac	Late Lilac
Basswood	Greenspire Littleleaf Linden	Eastern Hemlock
Carolina Hemlock	Judd Viburnum	Leatherleaf Viburnum
Doublefile Viburnum	Korean Spice Viburnum	
Plants Frequently Damaged		
Balsam Fir	Fraser Fir	Norway Maple
Eastern Redbud	Atlantic White Cedar	Clematis
Cornelian Dogwood	Winged Euonymus	Wintercreeper
English Ivy	Apples	Cherries
Plums	Rhododendrons	Evergreen Azaleas
Catawba Rhododendron	Pinxterbloom Azalea	Hybrid Tea Rose
European Mountain Ash	Yews	English Yew
Western Yew	Japanese Yew	English / Japanese Hybrid Yew
American Arbovitae		

4. Repellents – Repellents work by reducing the attractiveness and palatability of treated plants to a level lower than other available forage. There are two (2) classifications of repellents, including odor-based and taste-based. Odor-based repellents are generally more advantageous as animals realize plants are treated prior to having to sample and taste a plant which causes damage. Commercial repellents do not perform equally, and research has indicated that odor-based products often out-perform taste-based solutions. The effectiveness of repellents depends on several factors. Rainfall will dissipate some repellents, requiring reapplication. Some repellents do not weather well even in the absences of rainfall. Deer are also likely to ignore either taste or odor repellents in times of food scarcity.

Samples of repellents are:

Deer-Away® - This contact repellent is both an odor and taste-based repellent. Studies have shown it to be 85% to 100% effective.

Hinder® - This area repellent is one of the few registered for use on edible crops. It is applied directly to vegetable and field crops as well as ornamentals and fruit trees. Its effectiveness is usually limited to two or four weeks.

Thiram – This repellent is a fungicide that acts as a contact deer repellent. It is most often used on dormant trees and shrubs. Thiram products are most effective when used with Vapor Gard® which increases adhesion.

Miller® Hot Sauce – This contact repellent is suggested for use on ornamentals, Christmas trees, and fruit trees. Care must be taken when applied to fruit trees or vegetables.

Tankage – This repellent is a slaughterhouse by-product traditionally used as a safe repellent in orchards. It repels deer and anything else by smell. Various forms of animal urine (fox, mountain lion, wolf, or any other predator type) are also effective and safe.

Ro-pel® - This taste-based repellent repels deer with an extremely bitter taste. Ro-pel® requires only a once a year application. It is not recommended for use on edible crops.

Hair Bags – Human hair is an odor repellent that costs very little but has not consistently repelled deer. Human hair is collected, placed in mesh bags and hung from shrubs and tree branches.

Bar Soap – Recent studies and numerous testimonials have shown that ordinary bars of soap applied in the same manner as hair bags can also be effective. One bar can protect a radius of about one yard.

When using any form of repellent, follow all directions indicated on the label. No toxicants are registered for deer control. Poisoning of deer with any product for any reason is illegal. The effectiveness of any product is related to the availability of food sources. Repellants work when applied repeatedly and when varied as deer can become immune to a particular scent. These repellants can be purchased in most home and garden stores or through farming/hunting supply catalogs.

5. Supplemental Feedings – This method can draw deer away from specific problem areas by using baiting stations. However, additional deer problems may be created near these stations. Concentrating deer may result in excessive plant damage in the new location increasing the possibility of disease transmission and canine predation. The idea of "deer parks" consisting of strategically located, developed and managed food plots has been proposed and is currently being investigated. A problem with this option is that it cannot be considered in any comprehensive plan which includes lethal options that require the use of nuisance permits issued by the State of Ohio Division of Wildlife. It is therefore not included in this Plan.

6. Fencing – Fencing is a reliable method to address site-specific problems such as landscape or agricultural damage. Several factors must be considered before using fencing as a deer control option. These factors include fence design, site history, and crop or landscape value, local ordinances, and size of the area to be protected. Types of fencing that have been effective are woven wire fencing, three-dimensional outriggers, slanted or vertical fencing, and electrical fencing. Low-profile fences are seldom effective.

7. Hazing or Frightening Techniques – These methods are effective under some circumstances, but deer rapidly habituate to these disturbances. Motion-sensing detectors have been used to trigger both audible and ultrasonic devices for frightening deer. Strobes, sirens, water sprays, and other devices have been used to frighten deer with limited effectiveness. Although deer can detect ultrasound, they are not repelled by it because they do not associate the disturbance with danger. All of these techniques are most effective if implemented either before or at the initial stages of deer intrusion. Deer movements or behavioral patterns are difficult to modify once they have been established.

8. Dogs – Dogs contained by an invisible fence have been utilized and are very effective repellents. Dogs have been shown to be more effective than commercial repellents. The breed and disposition of the dog will influence effectiveness of this technique. Dogs restricted by an invisible fence system can keep deer out of an area if allowed to patrol that area day and night.

Non-Traditional Techniques

1. Reproductive Agents – Reproductive agents for wildlife are not commercially available. They are currently classified as experimental and are produced by research facilities. Research trials are ongoing, but this option is not viable. **The Ohio Department of Natural Resources, Division of Wildlife, will not authorize this technique.** (ORC 1531.02)

2. Relocation – This technique requires the use of traps and /or remote chemical immobilization techniques. This method has been demonstrated to be impractical, stressful to the deer and may result in a high post-release mortality rate of up to 85%. These programs also require release sites that are capable of receiving deer. The potential for spreading disease must be considered. **The Ohio Department of Natural Resources, Division of Wildlife, will not authorize this technique.** (ORC 1531.08)

Lethal Alternatives

The Ohio Division of Wildlife will process deer damage control permits to applicants experiencing a high rate of deer vehicle accidents resulting in significant safety issues. Permits may also be granted in reducing numbers based on property damage to landscapes, ornamental shrubbery and gardens. In past years, these permits have been used successfully in Solon's culling effort to minimize problems in those areas.

DEER REMOVAL OPTIONS

1. Traps and Euthanasia – This technique is effective and can be used where there are concerns involving safety. This method involves baiting deer into traps and euthanizing the deer once it is caught. Deer are euthanized humanely and it is a very safe option that can be used where public safety is a concern and hunting and/or sharp shooting is not an option. Traps are site specific and can easily target areas of heavy deer travel or concentration. This technique allows for a high degree of efficiency. To date traps have not been utilized in the City. They may be the only effective method to remove deer in central areas. This method can be performed by our animal warden or private contractor by ODOW permit only.

2. Bow Hunting – This technique permits trained bow hunters to safely remove deer from both rural and suburban areas. This method can maximize safety, discretion and provide a level of efficiency. It is generally the least expensive cost per deer. A pilot program has been proposed which would utilize large areas of City owned property. This program would be heavily regulated. This program would be evaluated and consideration given to allowing this option on larger areas of private property. Following Division of Wildlife rules and regulations as is done in many of our neighboring communities. Proposed program guidelines are included in Appendix 1-C. These guidelines will be discussed in the future should a program be considered.

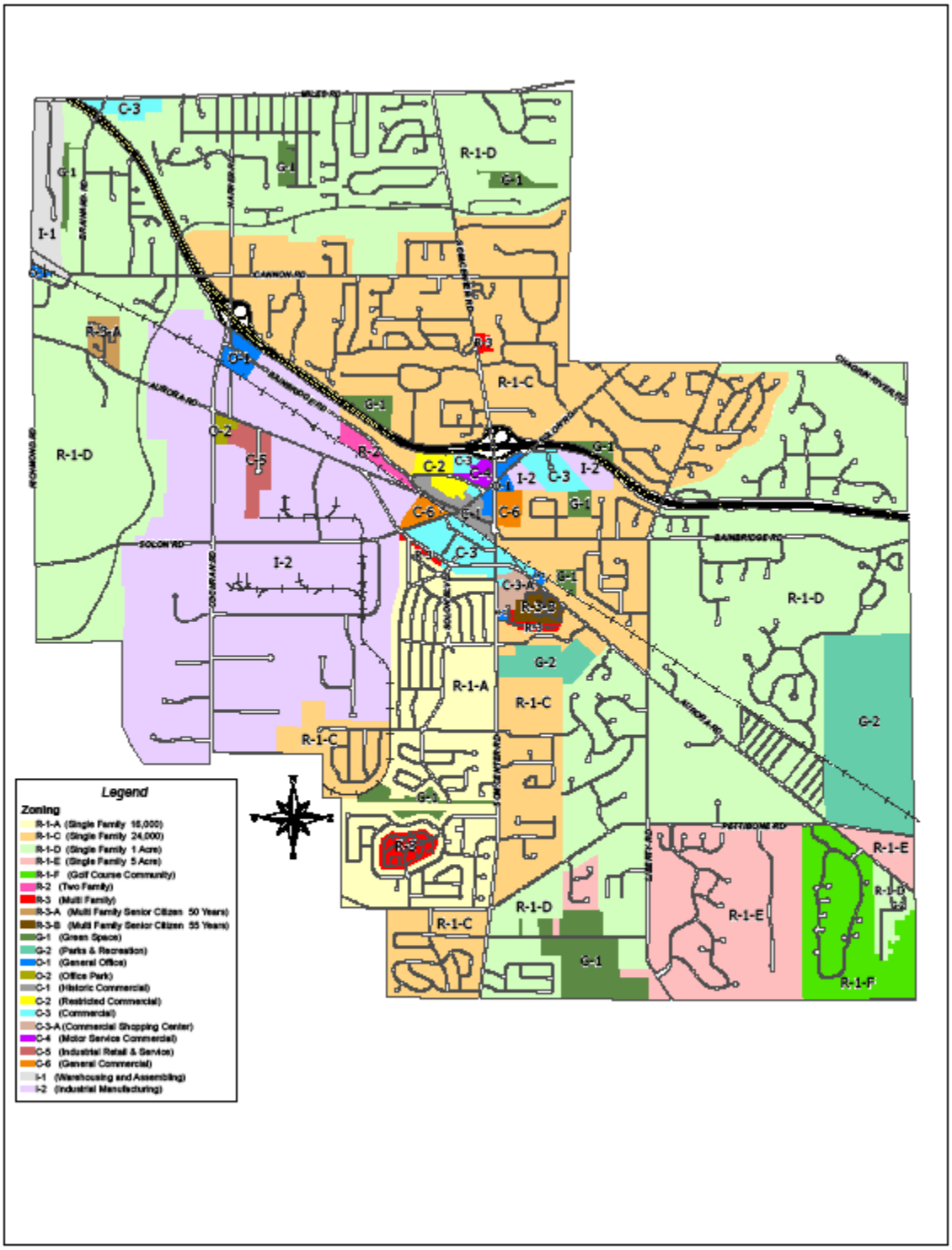
3. Sharp Shooting – The use of trained personnel to remove deer through sharp shooting has been successful. Using a variety of techniques maximizes safety, humaneness, discretion and efficiency. It can be a costly solution. These activities would take place on residential properties at the request of the property owners as well as selected city owned properties. A thorough screening process would be conducted to insure safety measures are addressed prior to any culling activity. Notification would be provided to abutting property owners and the City of Solon Police Department will be utilized to secure the site when being used. This method had been employed successfully from 2005 – 2009. Table 2-A provides a summary of those efforts. All animals which have been removed by this method have been processed and the meat donated to local food banks. This practice will be continued.

Conclusion

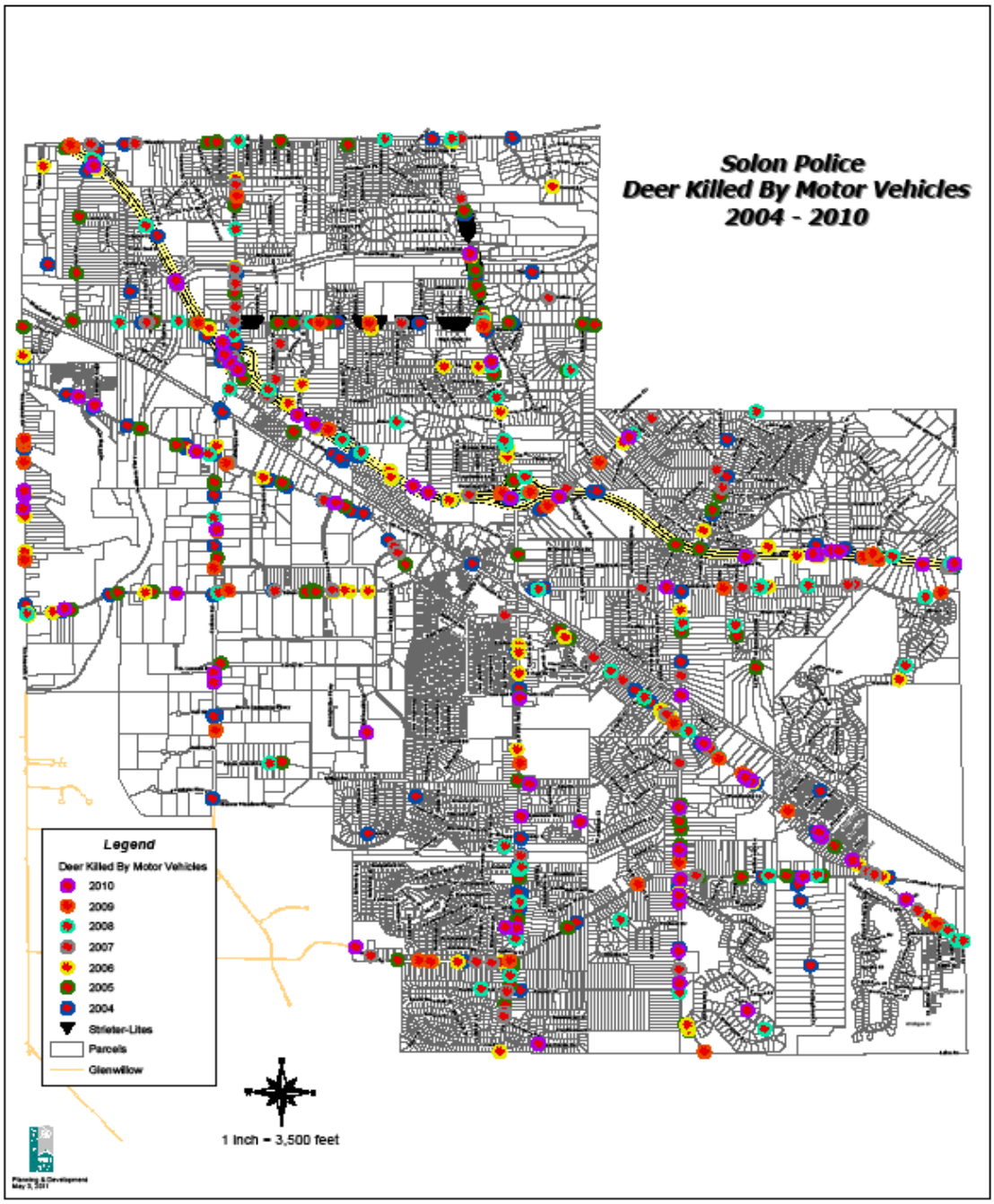
Our comprehensive deer management plan includes both lethal and non-lethal methods in dealing with the deer population. We anticipate that a well thought out, coordinated and executed plan will require very little adjustment from one year to the next. Most wildlife experts suggest that the proper density level for deer is 20 - 25 deer per square mile in a rural setting. This ratio should be closer to 10 - 15 in a densely populated, suburban setting. The following table details deer density levels based on data collected over the past several years. Based on this information and our land area, our number should be managed between 206 - 309 total deer city wide. That being said we believe that we can practically target that number between 300 - 400.

Year	Deer Count	Ratio (deer/square mile)	Deer Vehicle Accidents	Deer Removed
2004	922	45	165	
2005	762	37	119	602
2006	496	24	85	400
2007	450	22	90	150
2008	560	27	72	175
2009	450	22	45	250
2010	694	34	64	0
2011	724	35	105	0

1-A


Legend
Zoning
R-1-A (Single Family 15,000)
R-1-C (Single Family 24,000)
R-1-D (Single Family 1 Acre)
R-1-E (Single Family 5 Acre)
R-1-F (Golf Course Community)
R-2 (Two Family)
R-3 (Multi Family)
R-3-A (Multi Family Senior Citizen 50 Years)
R-3-B (Multi Family Senior Citizen 55 Years)
G-1 (Green Space)
G-2 (Parks & Recreation)
O-1 (General Office)
O-2 (Office Park)
C-1 (Historic Commercial)
C-2 (Restricted Commercial)
C-3 (Commercial)
C-3-A (Commercial Shopping Center)
C-4 (Motor Service Commercial)
C-5 (Industrial Retail & Service)
C-6 (General Commercial)
I-1 (Warehousing and Assembling)
I-2 (Industrial Manufacturing)

1-B


Solon Police
Deer Killed By Motor Vehicles
2004 - 2010
Legend
Deer Killed By Motor Vehicles
2010
2009
2008
2007
2006
2005
2004
Strieter-Lites
Parcels
Glenwillow
1 Inch = 3,500 feet

- **The Program Director or their designee may issue a Deer Hunting Permit if the application meets the following requirements:**

  A. The Program Director or their designee determines that the applicant has and will continue to comply with all laws, rules, and regulations of the State of Ohio Division of Wildlife and is either a current employee of the City of Solon or a Current resident.
  B. The applicant demonstrates the completion of the Ohio Division of Wildlife hunter education safety course and or all other State requirements within the past two years.
  C. Property owners immediately adjacent to the property in which the hunting is to be conducted are notified in a manner which shall be determined by the Program Director or their designee:
  D. The applicant is 21 years of age or older.

- **The property from which the hunting is to be conducted must the following requirements and criteria:**

  A. The hunting area shall consist of no more than two (2) adjacent parcels of land that, combined, consist of no less than five (5) acres; (if deemed appropriate by the Program Director or their designee, the property may consist of more than two (2) adjacent parcels of land however in no instance shall the hunting area consist of more than three (3) parcels of land.
  B. The hunting area shall not be adjacent to any schools.
  C. Written permission from the property owner(s) must be obtained and be in the possession of the applicant at all times while hunting is taking place.
  D. The application provides the (GPS) Global Positioning System coordinates of the approved site/platform to the Program Director.
  E. The applicant agrees, in writing, to defend and indemnify the City of Solon for any acts committed by the applicant while exercising the hunting rights granted hereunder.
  F. The Program Director or their designee does not find that the application otherwise infringes upon the health, safety, and welfare of the residents of the City of Solon.
  G. Solon reserves the right to approve, disapprove or revoke privileges on any site for any reason at any time.
  H. Shooting stand must be a minimum of 12 feet above ground. Any proposed change in stand location must be reapplied for and approved by the Program Director or their designee prior to being used.

- **Application fees and security bonds**:

  A. The applicant shall pay a $25.00 application/site inspection fee to the City of Solon prior to being issued a hunting permit or before any hunting has commenced.
  B. Each applicant will be subject to a $250.00 security bond payable to the City of Solon. The security bond will be refunded to the applicant at the end of the yearly deer hunting season. In the event any rules or regulations of the program are violated, the security bond will be forfeited by the applicant and additional punitive damages will be assessed.

- **Permits, harvest limits and equipment criteria**

  A. The deer hunting permit shall only be used by the named and authorized permit holder.
  B. The applicant shall print and label all hunting arrows with the permit holders full name and address and shall be used during any hunting.
  C. Each Deer Hunting permit shall be valid only during the dates specified on the issued permit.
  D. The ratio of deer harvested shall be two (2) does to one (1) buck. Two does must be harvested prior to harvesting a buck.
  E. Only crossbows with a minimum of 175 lb draw weight will be considered as an acceptable weapon in the program.
  F. All Crossbows must be capable of shooting a minimum of 300 feet per second (FPS) with a minimum arrow weight of 450 grains complete.
  G. No open sighted crossbows will be considered as an acceptable weapon. All crossbows must be equipped with a scope device with a minimum of 1 x magnification.
  H. All crossbow arrows must consist of either aluminum or carbon materials.
  I. All crossbow arrows must be equipped with a minimum of a 125 grain broad head device.
  J. No mechanical broad heads will be allowed for use in the program.
  K. All crossbows, arrows, scopes, tree stands or any other equipment being used to aid the hunter in this program will be subject to inspection and the approval by the Program Director or their designee at any time throughout the hunting season.
  L. All hunting is to be conducted from an elevated platform. The platform must conform to all (TMA) Tree stand Manufacturers Association standards and its hunting location shall be inspected and approved by the Program Director or their designee to ensure the safety of all persons and property. Stand location may not be moved without notifying the Program Director to have the new perspective site authorized.
  M. No compound, longbow or recurve bows will be approved in the program.

- **Applicant Qualification Process**

  A. Each applicant will be subject to passing a shooting proficiency test. Details related to the proficiency test will be forwarded to each applicant prior to the testing.
  B. All Applicants will be subject to a criminal background check to ensure public safety. Applicants will be required to sign a consent form at the time of application.
  C. Applicant must show proof of successfully passing a State of Ohio Hunter Education Course within the past two years.
  D. All applicants must attend and complete a bow hunting safety course administered by the City of Solon. The course schedule will be determined by the Program Director.

Appendix 1-D

Public Works

1. Deer Damage Report

* 1. Date damage occurred:

* 2. Name:

* 3. Address of occurrence:

* 4. Description of damage:

Table 2-A

CITY OF SOLON
HISTORICAL DEER DATA 1994 – 2010

Year	Deer Count	Accidents	Deer Culled	Cost	Cost/Deer
1994		110			
1995		112			
1996		120			
1997		116			
1998		116			
1999		129			
2000		117			
2001		112			
2002		98			
2003		175			
2004	922	165			
2005	762	119	602	$207,690	$345
2006	496	85	400	$191,600	$479
2007	400-500	90	150	$75,533	$503
2008	568	72	175	$99,723	$570
2009	450	45	250	111,795	$447
2010	694	64	0	NA	NA
2011	724	105	0	NA	NA