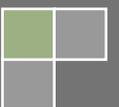


# Deer Management Plan

City of Solon

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

This revised Management Plan have been accepted by the Mayor and Council of the City of Solon on September 15, 2014 Ordinance 2014-202.



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## **I. ACRONYMS USED IN THIS MANAGEMENT PLAN**

**COS - City of Solon**

**DVA - Deer/Vehicle Accidents**

**ODNR - Ohio Department of Natural Resources – Division of Wildlife**

**USDA - United States Department of Agriculture, Animal and Health Inspection Service,  
Wildlife Services**

**WAC - Wildlife Acceptance Capacity**

## **II. AREA DESCRIPTION AND OVERVIEW**

The City of Solon (COS) is located in southeast Cuyahoga County, and is comprised of 20.6 square miles or approximately 13,400 acres. The City is nearly fully developed and has a population of 23,348 according to the 2010 census. 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 Metro parks), 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.

For the purposes of the Solon Deer Management Plan, the City can be divided into three property groups. The central business district is the commercial and retail property group, and includes the City's shopping districts; food and automobile services areas, and such other residential and business uses that make up the City's central core. Generally, this area includes the triangle formed by the confluence of SOM Center Road, Solon Road, Aurora Road. In the north-south directions this group includes areas along SOM Center Road from US Route 422 south to approximately Linden Drive; and in the east-west direction from the Aurora Road and Solon Road intersection east to a line parallel to SOM Center Road and running north/south approximately 500 feet east of SOM Center Road. The central business district is comprised of approximately 374 acres, and is about 2.86% of the total acreage in the City. Although all areas of the City are affected by deer activity, this central area is the one that is believed to be least affected by deer/human conflict.

The Solon industrial area comprises the property group that includes the vast majority of the City's industrial, warehousing and general manufacturing uses. The area can generally be described as extending from the Harper Road interchange on US Route 422 south along Harper and Cochran Roads to the City's southern border with the Village of Glenwillow. The areas zoned for commercial and industrial use east and west of the Harper/Cochran corridor can be included in this property group. The industrial area is comprised of approximately 2077 acres, and is about 15.9% of the total acreage in the City. This industrial area experiences what is believed to be a higher level of deer activity than the central core of the City. Significant numbers of DVA still occur especially along Cochran Road, Solon Road and Aurora Road in this area. Damage to landscape caused by deer activity has also been observed, but not quantified at this time.

The City's residential areas include the third property group that pertains to this management plan. The area in this property group includes all properties which are zoned residential, plus those other zoning designations which do not fall within the central commercial district, or the industrial/commercial property groups described above. All of the "Green Areas" mentioned in the first paragraph of this section fall within this property group. There are also significant high tension power lines which are controlled by the First Energy Corporation; two old railroad Right-of-Way corridors, and long expanses of the Cleveland Metro Parks. These properties provide corridors where deer can move about with relative ease. The residential areas of the City are comprised of approximately 10,609 acres, and include about 81.24% of the total acreage in the City. The proximity of green areas, and many other wooded and vegetated areas, combine with the number of residents in this property group to make human/deer conflict virtually inevitable. It is this residential area in which it is believed the highest level of DVA; landscape damage caused by deer; and deer/human conflict takes place. Landscape damage, although observed, has not been quantified at this time.

An aerial photograph of the City (Appendix 1-C) is included in this management plan which shows the three property groups discussed in this section.

A statewide overview of deer has shown that in the early 1900's there were very few white tailed deer within the State of Ohio. Beginning in 1930 deer migrated back into the state and began to repopulate. In 1970, the statewide herd was estimated at 17,000 and the ODNR 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 DVA. Each area of the State has its own unique challenges in dealing with these numbers, and that includes the COS.

The COS 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 DVA, which peaked at 175 incidents in 2003. In addition, the City was receiving some inquiries 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 the 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 increased to 724 and the DVA increased to 93.

In late 2011 the Mayor and Council of the City decided to re-implement a Deer Management Program which was based substantially on the programs performed from 2005 to 2009. Again, sharpshooting practices were the main methods employed, and 300 deer were removed from the City in early 2012; with an additional 200 deer removed in 2013. In the early months of 2014, an additional 90 deer were removed. During 2012, the number of DVA was reduced to 60. In 2013, the number of DVA were reduced to 35. All historical deer data from 1994 through 2014 is shown in Table 1-A.

The management of deer/human conflict represents a long term commitment. This current revision to the Solon Management Plan is proposed to set the course for deer management activity within the COS for a period of approximately 10 years. This ten year vision will allow the City to better quantify and define the goals of the Management Plan, and ultimately to strike an improved balance between the health and safety of the City of Solon; and the place white-tailed deer will attain within the ecological environment of the City.

### **III. SOCIAL AND BIOLOGIC ISSUES**

There is no question that the American White Tailed Deer has attained its place as part of the bio-diversity within the State of Ohio. Deer have also been, and will continue to be, an important part of the ecological makeup of the City of Solon. It is also true, however, that by the year 2000 the quantity and density of deer in most, if not all, parts of Solon had become out of line with historical levels.

The Solon Deer Management Plan is not meant as an exhaustive scientific study into the cause and effects of high numbers of deer in the City. Rather, the City's adoption of previous management plans, and the effort that is going into this revision, have been an acknowledgment of years of discussion and observations on the subject of deer and their effect on human life within the City of Solon. In 2004, based on all activities and discussions to date the following list was developed to provide the basic suppositions that the City used to underscore the need for a Deer Management Program:

- Deer had caused significant damage to landscaping throughout the City.
- Deer had caused significant damage to the plant life in the City's wooded areas.
- The bio-diversity and ecology of City Parks, and private wooded areas had changed due to an increase in the number of deer in the city since approximately 1970.
- DVA posed a significant threat to our roadways.

There was some anecdotal evidence that suggests that all four bulleted items above were occurring in the COS. With the exception of DVA, however, the COS had not specifically documented the extent to which deer activities had affected the other bulleted points in the above list. Since the inception of the program biologic conditions, specifically the condition of plant life in landscaped and wooded areas, is believed to be improving in rough proportion to the amount of deer management which has taken place. The City's original management plans sought to control all health and safety issues by establishing deer density standards throughout the City.

Early deer counts suggested that the deer in the COS at the time deer culling began in 2005 were in excess of 50 deer per square mile. Initial Deer Management Plans called for a target of 10 to 20 deer per square mile. Needless to say this goal did not take into account the lack of uniformity in deer population that was inherent in a diverse city. Neither did previous plans document, except in a general way, the social effects of deer in the city.

One document that incorporated the interplay of wildlife and the social effects on people was a work entitled Toward a Concept of Wildlife Acceptance Capacity in Wildlife Management (1988, Decker D.J. and K.G. Purdy). This work deals with the concept of what is the maximum wildlife population level in an area that is acceptable to people. This concept appears to be accepted by wildlife management experts as an appropriate tool in developing programs for wildlife control especially in populated areas.

It is the direction of this Revised Management Plan to take a closer look at the concept of how deer and human interaction affects the COS as a whole. This concept will be further developed in later sections of the City's Management Plan.

#### **IV. PUBLIC INFORMATION AND EDUCATION**

As early as 2003, the question of deer management has been discussed at a variety of public meetings. Many of these discussions have been general in nature, and for those individuals interested in a more in depth source of information, the following sources are suggested:

- Conover, M. R. 2001. Effect of hunting and trapping on wildlife damage. *Wildlife Society Bulletin* 29(2):521-532.
- Côté, S. D., T. P. Rooney, J. P. Tremblay, C. Dussault, and D. M. Waller. 2004. Ecological impacts of deer overabundance. *Annual Review of Ecology, Evolution, and systematics* 35: 113-147.
- deCalesta, D. S. 1992. Impact of deer on species diversity of Allegheny hardwood stands. *Proceedings of the Northeastern Weed Science Society Abstracts* 46:135.
- Decker, D. J., and K.G. Purdy. 1988. Toward a concept of wildlife acceptance capacity in wildlife management. *J. Wildl. Manage.* 58(4): 711-718.
- Deer Management Task Force 1996. Findings and Recommendations. Unpublished Report. 112pp.
- J. B. Paulin, P.D. Curtis, D.J. Decker, G.J. San Julian. 2003. Assessment of Economic Impacts from Deer in the Northeastern United States. Rutgers Cooperative Extension.
- Jones, S. B., S. deCalesta, and S. B. Chunko. 1993. Whitetails are changing our woodlands. *American Forests* 99:20-25, 53-54.
- K.M. Loconti Lee, and N. A. Connelly. 1990. Incidence and costs of deer-related vehicular accidents in Tompkins County, New York. Cornell University, Ithaca, New York.
- Ohio Department of Natural Resources Division of Wildlife. *Managing Ohio's Deer Herd*. Publication 87. <http://www.dnr.state.oh.us/Portals/9/pdf/pub087.pdf>
- Petit, L. J. 1997. Impacts of white-tailed deer on forest understory birds in the Cuyahoga Valley National Recreation Area and surrounding public forest lands. Unpublished progress report.
- Romin, L. A., and J. A. Bissonette. 1996. Deer-vehicle collisions; status of state monitoring activities and mitigation efforts. *Wildlife Society Bulletin.* 24:276-283.
- S. J. Weber, C. A. Bridges, and J. L. Stokes. 1997. Nontraditional techniques for management of overabundant deer populations. *Wildlife Society Bulletin* 25:296-499.
- Swihart, R. K., P. M. Picone, A. J. DeNicola, and L. Cornicelli. 1995. Ecology of urban and suburban white-tailed deer. Pages 35-44 in J. B. McAninch, editor, *Urban deer-a manageable resource?* Proceedings of the 1993 Symposium of the Central Section, The Wildlife Society.

- W. C. Pitt, K. K. Kessler, T. J. Dubow, and W. A. Sanborn. 1995. Review of human injuries, illnesses, and economic losses caused by wildlife in the United States. Wildlife Society Bulletin 23:407-414.

In reviewing information, it is noted that the management of a deer herd is a highly sensitive issue. One of the goals of this Management Plan is to emphasize the positive benefits of a stable, managed herd, throughout the COS.

## **V. POPULATION ESTIMATES AND PROGRAM MONITORING**

Table 1-A (Historical Deer Data 1994-2014) includes a column for deer counts. Deer counts shown represent an educated estimate of the number of deer within the City at the time the count was taken. It should be noted that the number of deer impacting the COS, and its people, has, as expected, gone down during periods of deer management activity. Conversely, the population has risen during periods when no deer management activity has taken place.

The first actual attempts to count the number of deer in the City took place in late winter/early spring of 2004, and again in late fall of 2005. Both these counts were performed by an outside firm using aerial infrared technology. This type of technology is performed from an airplane flying at relatively low elevations. The work is performed with heat sensitive photographic technology which allows the viewer to see deer as small glowing shapes on the landscape. An experienced individual can differentiate these shapes from dogs, and other forms of smaller wildlife. The shapes are then counted and tabulated.

Deer counts performed from 2006 to 2013 have been completed through the offices of the City's Animal Warden. These counts have been ground counts performed in the fall, generally after the leaves have fallen off the trees. These counts are performed by dividing the City into segments, and, from the ground, counting the number of deer in each section. This information is then analyzed, and adjusted only if necessary, to arrive at the City wide estimate.

In December of 2013, the City worked with the USDA to perform a separate count of deer within the COS. This count was performed by USDA personnel, and was an aerial count taken from a helicopter. The results of this count are shown as a separate count performed in 2014 on Table1-A, Historical Deer Data.

It is the position of this Management Plan to continue to perform deer counts on an annual basis using the offices of the City's Animal Warden, or other designated personnel. Whoever performs this work for the City will perform it in a consistent manner, and in conformance to established and accepted methods.

In the future, in order to check and verify the counts performed on an annual basis, the City plans to employ an outside agency or consultant to perform a separate count. These counts will be performed at approximately four to six year intervals. The means and methods of these counts will be determined at the time the count is performed.

It should be noted that a deer count represents an estimate based on a snap shot in time. The number of deer counted may not represent actual numbers of deer affecting the City, or any particular section of the City.

As stated, a part of this revised management plan is to monitor not just the number of deer in the City, but also the impact of deer activity in the City. In addition to deer population and DVA, added emphasis will be placed on reviewing information provided by the following:

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 City or by utilizing the Deer Management Survey<sup>1</sup> on the City’s website. This information will be provided to ODNR personnel when required.
2. 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.
3. Public Opinion Surveys – The City will continually conduct public surveys regarding DVA, landscape, garden, and crop damage in addition to other citizen concerns.

For those interested, the COS website can be visited at [www.solonohio.org](http://www.solonohio.org). Deer management information and survey forms are under the “Residents” section.

## **VII. 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 options are acceptable for more rural areas while being less suitable for a city setting.

### **A. TECHNIQUES FOR DEALING WITH 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. Enhanced 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.<sup>2</sup>

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

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<sup>1</sup> Appendix 1-E samples of Deer Management Survey Forms available on the City’s website

<sup>2</sup> Appendix 1-B illustrates deer vehicle accidents by year and location since 2004

Table 1-A details deer vehicle accident totals from 1994 through 2014

reflectors than rural deer, as suburban deer are more likely accustomed to human activity and lights. The COS has installed the streiter lite systems in selected areas within the City. These systems will continue to be maintained and monitored.

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 (or higher) 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 does not appear to be practical in most areas.

#### B. NON-LETHAL METHODS FOR DEALING WITH DEER/HUMAN CONFLICT

1. Ban on Deer Feeding – Supplemental feeding 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.
2. 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. A listing of palatable and unpalatable plantings is available on the COS website.

*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.*

3. 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. A sample list of deer repellants can be found on the COS website.
4. 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 at this time.
5. 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.
6. 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.
7. 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.

#### C. NON-TRADITIONAL TECHNIQUES FOR DEALING WITH DEER POPULATION CONTROL

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 1501:31-15-03)
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 at this time.**

#### D. LETHAL METHODS FOR DEALING WITH DEER REMOVAL

The ODNR will process deer damage control permits to applicants experiencing significant safety issues and for other legitimate reasons. 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 an option that can be used where public safety is a concern and hunting and/or sharpshooting is not an option. Traps are site specific and can easily target areas of heavy deer travel or concentration. 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 ODNR permit only.
2. Bow Hunting – This technique permits trained bow hunters to remove deer from both rural and suburban areas. The advantages of this method are that it can be performed in a manner that is cost effective and it can be regulated with an acceptable level of safety. However, more information is needed on the operation and safety of this type program. The disadvantages are that the work, as proposed would require the use of larger parcels which are generally only available in outlying areas of the City, and that it would require an effort on the part of the City to regulate the program. At present, this type of program within the COS has only been discussed on a preliminary basis. Specific guidelines will be discussed in the future should a program be considered.
3. Sharpshooting – The use of trained personnel to remove deer through sharpshooting 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 COS Police Department will be utilized to secure the site when being used. This method had been employed successfully from 2005 – 2009, and again in 2012, 2013 and 2014. Table 1-A provides a summary of those efforts. All deer which have been removed by this method have been processed and the meat donated to local food banks.

## **VII. EVALUATION OF ALTERNATIVES**

Methods for managing what has become an abundance of deer vary from city to city. In the COS, this Management Plan contains suggestions on such things as protecting landscaping from feeding deer, and modifying driving habits to help reduce DVA. It is, of course, strongly urged that citizens adopt all appropriate plan recommendations that are unique to their own situations. However, it is the position of the COS that these recommendations will not completely moderate human/deer conflict. In the COS, the main goal has been, and continues to be, the protection of human health and safety primarily by reducing DVA. This reduction has been accomplished using sharpshooting methods in accordance with all applicable laws.

The decision to employ lethal sharpshooting as the means to control the physical number of deer within the City has been discussed since 2004. Many of the reasons for the program developed as a result of these discussions, and have been incorporated into this Management Plan. However, the entire body of dialogue and reasoning that went into this decision is long standing, and voluminous. Individuals who wish to examine additional information on the reasons for, and approach to, the City of Solon's Deer Management Plan can refer to the list of references that are contained in section IV of this work. This Management Plan prescribes the continuation of sharpshooting in the COS.

The update for this plan has been envisioned for at least a ten year time frame. A specific part of this plan is the continuous review of all goals and methods employed in the program. For example, if new methods for managing deer were to be developed during this period, the City could evaluate these new methods, and incorporate them into the City's Deer Program if appropriate. Major changes will be done in the form of an addendum to the plan.

## **VIII. DESIRED GOALS AND SPECIFIC OBJECTIVES**

To reiterate, beginning in 2005 the COS set out to reduce the deer population of the City. The immediate goals were a general and widespread, reduction in landscape damage; wooded area damage, and DVA. Since 2005, a total of 2167 deer have been removed from the City. With these reductions, the City has noted improvements in all these immediate goals. The most significant example of these improvements has been the reduction of DVA in the City. However, while DVAs have been quantified, other items listed have not. Although it is believed that observed landscape and wooded area damage has been reduced, proof of the extent of damage reduction has been anecdotal in nature. General observations, and a falloff in citizen's complaints have also led to the conclusion that some improvements have been made. However, a better system of tracking the general level of satisfaction/dissatisfaction is one of the goals of the program.

### **A. DVA (Deer Vehicle Accidents)**

Because of its emphasis on safety, controlling and monitoring deer vehicle accidents (DVA) in the City has been the primary means of tracking progress for the deer management program. This emphasis on

health and safety will not change, and the control of DVA in the City will continue to be the primary means of monitoring this program as it moves into the foreseeable future.

In calendar year 2013, the COS experienced 35 DVA city wide. This number represents a significant reduction in DVA over what the City had been experiencing just a few short years ago. While it can be argued that any number of DVA is too many, reducing this number to 0 is not realistic, given all considerations. The present goal of the City is to keep the average number of DVA at the level of 35 annually, or lower.

Further reductions in DVA are hoped to be attained by concentrating efforts on areas where DVA are still occurring at a higher than normal rate. Steps have already been taken to identify those areas of the City where high levels of DVA are occurring, and to take steps to mitigate these accidents.

#### B. WAC (Wildlife Acceptance Capacity)

In Section III of this Management Plan, the concept of a wildlife acceptance capacity (WAC) was introduced. It is the intention of this Management Plan to arrive at a general understanding of what Solon's stakeholders (both residential and commercial) view as a maximum acceptable level of deer in their area of the City.

It is therefore a secondary goal of this Management Plan to track public sentiment as it relates to acceptable thresholds of deer in the city. For the purposes of simplicity, the City has developed a short questionnaire (survey) which is designed to get a general response to the following:

- A general sense of how stakeholders judge the acceptability of the effect of deer on landscaping and personal enjoyment.
- A general sense of how stakeholders judge the acceptability of the safety of roadways as they relate to DVA.
- An ability to express any and all additional concerns regarding the management of deer within the COS.

The simplicity of this questionnaire is by design, and its purpose is to attempt to get as many responses as possible from stakeholders. A copy of a sample questionnaire form is located in Appendix 1-E. Please note that there are separate forms for residential and business/commercial questionnaires.

In regards to this questionnaire, please also note:

- The questionnaire is meant as a living document. Depending on the review of input from all sources, the questionnaire can be modified or changed completely in the future as an effort to exact the best information possible.
- Although the questionnaire bases its answers on the number of deer seen per week, these numbers are designed merely to get a better feel for what the public feels is an appropriate level of deer activity in the city.
- This questionnaire (survey) form will be available on the City's website for the foreseeable future. All residents and businesses are encouraged to provide input on this form whenever appropriate, and whenever making inquiries and/or complaints to the City regarding the Deer Management Program.

### C. SECTIONALIZING THE CITY

In an effort to better serve the stakeholders of the City, this Revised Management Plan has shown a need to examine the City on an area by area basis. For the purposes of this Management Plan, the City has been divided into five (5) separate sections. As described in Section II of this Plan, the central business district will comprise one section, and the Solon Industrial area will comprise a second. The large residential area of the City has been divided into three (3) separate sections. All of the (5) sections are depicted on the map shown in Appendix 1-D of this Management Plan.

Sectionalizing the City will allow better analysis on site specific issues. There will also be a better ability to hand tailor the program to explicit problems within each section of the City.

### D. SCHEDULE OF EVENTS

As stated previously in this work, this Management Plan is meant to have a life span of approximately ten years. It is expected that normal deer reduction activities will continue for that period. However, the Plan does allow for some variation to this schedule, based on input from all sources. In addition, the City will be reviewing other methods and strategies (including non-lethal) with a goal of reducing the level of human/deer conflict with the City.

It is the City's intent to proceed with the Program based upon the schedule in the following list of goals:

- 1) Inventory and analyze the locations of existing deer crossing signs within the City. Are these signs appropriately located? Are they effective? Are fewer signs warranted? Are additional signs warranted? Are other types of warning signs appropriate? (Winter of 2015)
- 2) Review the location of DVA within the City. Specific analysis must be placed on those location where excessive DVA are occurring. (Winter of 2015)
- 3) Examine fencing along the US Route 422 corridor to determine if it is adequately preventing DVA. As part of this examination, look at other areas of the City to determine if fencing would help control issues in site specific areas. (Spring and Summer of 2015)
- 4) Annually document the number of DVA in the City. The goal is 35 DVA a year.
- 5) On an annual basis, update the information in Table 1-A to reflect the latest year's information on deer counts, DVA, and number of deer removed as part of the Program.
- 6) Based on survey information provided by residents and businesses, establish a baseline for the WAC of deer in each section of the City. It is intended that citizens input will be requested at all times during the life of this Management Plan. This information will be monitored and analyzed at least every two years starting in the fall of 2014. It is generally accepted that the immediate goal will be to attain responses of light or no impact to questions 3 and 4 of the survey from at least 80% of the respondents.
- 7) Establish at least ten locations in wooded areas (at least two per section of the city) where deer browse damage can be monitored. Annually monitor these same sections, take photographs, and provide appropriate narrative on the amount of damage (if any) is observed. Begin this effort in the summer of 2015.
- 8) Update Deer Management information on the City's website every two years starting in the winter/spring of 2015. The City will provide updated information on all aspects of the program including non-lethal control options.

The above list is not meant to be all encompassing but serve as a point of beginning in examining the City's approach to the complete question of Deer Management within the City. The ongoing review will keep track of issues affecting the internal aspects of deer/human conflict, as well as examining the external matters such as regional, state, and federal guidelines.

## **IX. CONCLUSION**

It is the purpose of this Deer Management Plan to employ both lethal and non-lethal methods in dealing with Human/Deer conflict. In the past, Management Plans have emphasized the goal of reducing the density of deer within the City. While this is still a clear part of what the City is setting out to accomplish, it is only one of the factors involved. It is the point of this Plan to take a broader perspective in compiling the information needed to document the spectrum of Human/Deer conflict within the COS, and to adjust the Program accordingly.

The overriding purpose of this Plan is to work toward a model that better incorporates principals of bio-diversity, stakeholder input, and overall safety for the people of Solon. It is planned and expected that the adoption of this revised Plan will improve the overall specific outcome of deer management throughout the City.

Table 1-A

**CITY OF SOLON**

**HISTORICAL DEER DATA 1994 – 2016** (Table updated July 2016)

Year	Deer Count	Accidents	Deer Culled
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
2006	496	85	400
2007	400-500	90	150
2008	568	72	175
2009	450	45	250
2010	694	64	0
2011	724	105	0
2012	724	60	300
2013	555	35	200
2014	458**	56	90
2015	306***	34	100
2016	231		66

\*Aerial Infra-red count

\*\* This figure represents the City’s surface count in the fall of 2013. A separate helicopter “snow” count was performed in December of 2013. This count suggested the number of deer in the City is between 268 and 283.

\*\*\* The 2015 Deer Count was a surface count performed in the normal manner. However, the City has updated its counting procedure, and changed a factor used in its final calculation. This new procedure should better reflect the actual deer present in the City. The new procedure will be employed until further notice.

**CITY OF SOLON**  
**Deer Management Survey – Summer of 2014**  
**(For Residents)**

In order to provide the best possible service to all the residents within the City, we ask that you complete this survey, and return it in one of the following ways:

- By returning it to the city via e-mail. (Please visit the City of Solon website at [www.solonohio.org](http://www.solonohio.org).)
- By dropping the completed form off at the reception desk at the Solon Community Center or Senior Center at 35000 Portz Parkway, or at Solon City Hall, 34200 Bainbridge Road.
- By regular mail to the City of Solon, 34200 Bainbridge Road Solon, Ohio 44139. If you wish to have a survey form mailed to you, please call 440-337-1340 and leave your name and address and a blank form will be mailed along with a self-addressed, stamped envelope for the purpose of returning it.

1. To establish site specific information, we ask that you provide your address:

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ADDRESS

2. Optional. If you wish you may provide your name and phone number:

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NAME

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TELEPHONE NUMBER

Do you want us to contact you via telephone regarding this matter: Yes  No

3. The City of Solon has been actively managing the size of the deer herd in Solon for several years. In order to gauge the current level of deer activity affecting you and your property, please check the blocks that best describe your feelings for both City wide activities and as these activities affect your specific location:

**CITY WIDE:**

- The number and effect of deer and deer activity on neighborhood life is unacceptable to myself and/or members of this household.
- Heavy (Seeing deer at least 8 times or more per week with notable effect on neighborhood life and landscaping within the City.)
- Moderate (Seeing deer approximately 3 to 7 times per week with some effect on neighborhood life and landscaping within the City.)

- Light (Seeing deer less than 3 times per week with little effect on neighborhood life and landscaping within the City.)
- Although I may see deer from time to time, there is no personal impact from this activity that affects my neighborhood life or landscaping.

**YOUR SPECIFIC AREA:**

- The number and effect of deer and deer activity on neighborhood life is unacceptable to myself and/or members of this household.
- Heavy (Seeing deer at least 8 times or more per week with notable effect on neighborhood life and landscaping on and near this property.)
- Moderate (Seeing deer approximately 3 to 7 times per week with some effect on neighborhood life and landscaping on and near this property.)
- Light (Seeing deer less than 3 times per week with little effect on neighborhood life and landscaping on and near this property.)
- Although I may see deer from time to time, there is no personal impact from this activity that affects my neighborhood life or landscaping.

4. Deer/vehicle accidents are the primary safety concern and reason for the adoption of the Deer Management Program. To specifically gauge deer/vehicle conflict in your area/neighborhood of the City, please check the block next to the statement that best describes the driving constraints caused by deer in your location:

- The number and effect of deer and deer activity on our roadways is at an unacceptable level, and is not conducive to safe driving.
- Deer are seen on roadways regularly (at least 5 times a week), and cause a high level of concern, and caution for motorists in this household, and for others accessing this property.
- Deer are seen on roadways moderately (approximately 3 to 4 times per week), and cause a significant level of concern, and caution for motorists in this household, and for others accessing this property.
- Deer are seen on roadways intermittently (less than three times per week depending on the time of year), and cause some level of concern and caution for motorists in this household, and for others accessing this property.
- Although I may see deer on the roadway from time to time, motorists from this property have developed the awareness and driving skills needed to manage travel in this area with an appropriate amount of concern and caution.

- 5. Any additional concerns or comments regarding deer management within the City of Solon may be placed on the following lines. Feel free to comment upon any aspect of the program, and/or to elaborate on any of the above questions.

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Thank you for your time and effort in reviewing and responding to this survey.

**CITY OF SOLON**  
**Deer Management Survey – Summer of 2014**  
**(For Businesses and Commercial Properties)**

In order to provide the best possible service to businesses and commercial properties within the City, we ask that you complete this survey, and return it in one of the following ways:

- By returning it to the city via e-mail. (Please visit the City of Solon website at [www.solonohio.org](http://www.solonohio.org).)
- By dropping the completed form off at the reception desk at either the Solon Community Center or Senior Center at 35000 Portz Parkway, or at Solon City Hall, 34200 Bainbridge Road.
- By regular mail to the City of Solon, 34200 Bainbridge Road Solon, Ohio 44139. If you wish to have a survey form mailed to you, please call 440-337-1340 and leave your name and address and a blank form will be mailed along with a self-addressed, stamped envelope for the purpose of returning it.

1. To establish site specific information, we ask that you provide your address:

\_\_\_\_\_  
ADDRESS

2. Optional. If you wish you may provide your name and phone number:

\_\_\_\_\_  
NAME

\_\_\_\_\_  
TELEPHONE NUMBER

Do you want us to contact you via telephone regarding this matter: Yes  No

3. The City of Solon has been actively managing the size of the deer herd in Solon for several years. In order to gauge the current level of deer activity affecting you and your property, please check the blocks that best describe your feelings for both City wide activities and as these activities affect your specific location:

**CITY WIDE:**

- The number and effect of deer and deer activity on business life is unacceptable to members of this business.
- Heavy (Seeing deer at least 8 times or more per week with notable effect on business life and landscaping within the City.)
- Moderate (Seeing deer approximately 3 to 7 times per week with some effect on business life and landscaping within the City.)

- Light (Seeing deer less than 3 times per week with little effect on business life and landscaping within the City.)
- Although I may see deer from time to time, there is no personal impact from this activity that affects my business life or landscaping.

**YOUR SPECIFIC BUSINESS LOCATION:**

- The number and effect of deer and deer activity on business life is unacceptable to myself and/or members of this business.
  - Heavy (Seeing deer at least 8 times or more per week with notable effect on business life and landscaping on and near this property.)
  - Moderate (Seeing deer approximately 3 to 7 times per week with some effect on business life and landscaping on and near this property.)
  - Light (Seeing deer less than 3 times per week with little effect on business life and landscaping on and near this property.)
  - Although I may see deer from time to time, there is no personal impact from this activity that affects my business life or landscaping.
4. Deer/vehicle accidents are the primary safety concern and reason for the adoption of the Deer Management Program. To specifically gauge deer/vehicle conflict in your area of the City, please check the block next to the statement that best describes the driving constraints caused by deer in your location:
- The number and effect of deer and deer activity on our roadways is at an unacceptable level, and is not conducive to safe driving.
  - Deer are seen on roadways regularly (at least 5 times a week), and cause a high level of concern, and caution for motorists at this business.
  - Deer are seen on roadways moderately (approximately 3 or 4 times per week), and cause a significant level of concern, and caution for motorists at this business.
  - Deer are seen on roadways intermittently (less than three times per week depending on the time of year), and cause some level of concern and caution for motorists at this business.
  - Although I may see deer on the roadway from time to time, motorists using this property have developed the awareness and driving skills needed to manage travel in this area with an appropriate amount of concern and caution.
5. Any additional concerns or comments regarding deer management within the City of Solon may be placed on the following lines. Feel free to comment upon any aspect of the program, and/or to elaborate on any of the above questions.

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Thank you for your time and effort in reviewing and responding to this survey.