

Environmental Assessment

For

Management of Conflicts Associated with Resident Canada Geese in Wisconsin

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1.0 CHAPTER 1: PURPOSE AND NEED FOR ACTION

1.1 Introduction

The United States Department of Agriculture (USDA) is authorized and directed to protect American agriculture and other resources from damage associated with wildlife. The primary statutory authority for the Wildlife Service (WS) program is the Animal Damage Control Act of March 2, 1931, as amended (7 U.S. C. 426426c; 46 Stat. 1468) and the Rural Development, Agriculture, and Related Agencies Appropriations Act of 1988 (P.L. 100202). WS activities are conducted in cooperation with other federal, state and local agencies, and private organizations and individuals. Federal agencies, including the United States Department of Interior, United States Fish and Wildlife Service (USFWS), recognize the expertise of WS to address wildlife damage issues related to migratory birds.

Wildlife damage management, or control, is defined as the alleviation of damage or other problems caused by or related to the presence of wildlife is an integral component of wildlife management (Leopold 1933, the Wildlife Society 1990, Berryman 1991). The WS program uses an Integrated Wildlife Damage Management (IWDM) approach (sometimes referred to as Integrated Pest Management or IPM) in which a combination of methods may be used or recommended to reduce wildlife damage. IWDM is described in Chapter 1, 17 of The Animal Damage Control Program Final Environmental Impact Statement (USDA 1994). These methods include the alteration of cultural practices as well as habitat and behavioral modification to prevent damage. The reduction of wildlife damage may also require that the offending animal(s) be removed or that populations of the offending species be reduced through lethal methods.

WS's mission is to "provide leadership in wildlife damage management in the protection of America's agricultural, industrial and natural resources, and to safeguard public health and safety." This is accomplished through:

- A) training of wildlife damage management professionals;
- B) development and improvement of strategies to reduce economic losses and threats to humans from wildlife;
- C) collection, evaluation, and dissemination of management information;
- D) cooperative wildlife damage management programs;
- E) informing and educating the public on how to reduce wildlife damage and;
- F) providing data and a source for limited use management materials and equipment, including pesticides (USDA 1989).

This environmental assessment (EA) evaluates ways by which this responsibility can be conducted to resolve damage and conflicts with Canada geese (*Branta canadensis*) in Wisconsin. WS strives to reach and maintain a balance between wildlife needs and welfare and human needs and welfare. Humans and Canada geese are both part of the natural environment and both sets of needs and welfare must be considered when selecting methods to be used in a Canada goose damage management program. The question must be asked if the needs of Canada geese are more important or take priority over the needs of human beings. WS does not conduct any wildlife damage management to punish offending animals, to treat them inhumanely or abuse their welfare rights, but as one means of reducing damage.

WS is a cooperatively funded and service oriented program. Before any operational wildlife damage management is conducted, *Agreements for Control* or *WS Work Plans* must be completed by WS and the land owner/administrator. WS cooperates with private property owners and managers and with appropriate land, fish and wildlife management agencies, as requested and appropriate, with the goal of effectively and efficiently resolving wildlife damage problems in compliance with federal, state, and local laws, regulations, policies, orders, and procedures including the Endangered Species Act (ESA) and Migratory Bird Treaty Act (MBTA).

Most individual actions of the types encompassed by this analysis could be categorically excluded under the APHIS

Implementing Regulations for compliance with the National Environmental Policy Act (NEPA) (7 CFR§372.5(c)). APHIS Implementing Regulations also provide that all technical assistance furnished by WS is categorically excluded (7 CFR§372.5(c)) (60 Federal Register 6,000, 6,003 (1995)). However, WS is preparing this EA to assist in planning Canada goose damage management activities and to clearly communicate with the public the analysis of cumulative impacts of issues of concern in relation to alternative means of meeting needs for such management in southern and/or eastern Wisconsin (Appendix C Fig. 1). These activities will be primarily directed at resident/locally breeding giant Canada geese (*Branta canadensis maxima*) (hereafter referred to as resident Canada geese). This analysis covers WS's plans for current and future resident Canada goose damage management (RCGDM) wherever and whenever they might be requested, typically in 31 counties in southern and eastern Wisconsin.

This EA documents the analysis of the potential environmental effects of the proposed program. This analysis relies mainly on existing data contained in published documents (Appendix A), and to the Animal Damage Control Final Environmental Impact Statement (USDA 1994) to which this EA is tiered.

1.2 Purpose

The purpose of this EA is to analyze the effects of WS activities typically in southern and eastern Wisconsin (Appendix C Fig. 1) to reduce damage caused by resident Canada geese. Resources potentially protected by such activities include property (including agricultural crops) and quality of life, human health, and human safety.

1.3 Need for Action

1.3.1 Summary of Proposed Action

The proposed action is for the WS program to implement an IWDM program that would respond to requests for RCGDM to potentially protect property, agricultural crops, human health, and human safety typically in 31 counties in southern and eastern Wisconsin (Appendix C Fig. 1). However, conflict requests for assistance may occur anywhere and anytime in Wisconsin and it is WS's responsibility to respond to each request. An IWDM approach would be implemented which would allow the use of legal techniques or methods, used singly or in combination, to meet requestor needs for reducing conflicts with geese (Appendix B). Cooperators requesting assistance would be provided with information regarding the use of effective non-lethal and lethal techniques. Non-lethal methods used by WS may include resource management, physical exclusion, relocation and deterrents (see Appendix B). Lethal methods used by WS may include nest-egg destruction, live capture and transportation to a licensed poultry processing facility, live capture and euthanasia, and/or shooting (Appendix B). In many situations, the implementation of non-lethal methods such as good habitat alteration, repellents, and exclusion type barriers would be the responsibility of the requestor to implement. RCGDM by WS would be allowed in southern and/or eastern Wisconsin, when requested, on private property or public facilities where a need has been documented and, upon completion of an *Agreement for Control*. All management actions would comply with appropriate federal, state, and local laws.

1.3.2 Past, Present, and Future Information About Resident Canada Geese in Wisconsin

Early settlers in Wisconsin found abundant numbers of a large-sized race of Canada geese nesting on the prairie sloughs. This group of birds was fairly distinct in size from those nesting in the near arctic in Canada. Unregulated hunting and egg collection combined with the effects of wetland drainage soon reduced this population. As a result, giant Canada geese disappeared in the 1890s and 1930s from southern and northern Wisconsin, respectively. Efforts to restore breeding Canada geese to rural settings in Wisconsin began in the 1930s when the Wisconsin Department of Natural Resources (WDNR) obtained birds from private game breeders and other sources and established captive flocks (Wheeler and Cole 1990). The young of the year from the captive flocks were then released by the WDNR in rural Wisconsin settings, primarily in northern Wisconsin, to restore this extirpated nesting species. Well meaning non-governmental groups, primarily in eastern Wisconsin, established captive flocks and allowed the young of the year to escape to the surrounding landscape, thus starting breeding populations in this urbanized setting. Populations in rural and urban settings slowly grew through time, with urban populations growing at a faster rate than those nesting in the rural areas. These locally breeding,

'resident' Canada geese are defined as those Canada geese that nest and reside predominantly within the conterminous United States (Rusch et al. 1995, Ankney 1996, and Grandy and Hadidian 1997), and are designated as "giants" by Mississippi Flyway Technical Section, Mississippi Flyway Giant Canada Goose Management Plan (1996).

Wildlife management is often perceived as the struggle to preserve threatened and endangered species (T & E), regulate species exploited by humans and the humans who exploit them, and conserve the fields, forests, and wilderness areas that provide habitat for our wildlife resources. Increasingly, however, cities, towns, parks, and backyards have become sites of some of the greatest challenges for wildlife management. When prolific adaptable species such as deer, coyotes, raccoons, skunks, ducks, and Canada geese are combined with the inherent human interest in wildlife and desire to be close to wild animals and the abundant habitat represented by parks, spacious yards, water bodies, and other green spaces, conflicts are inevitable. Such is the case with very well recognized and popular Canada geese. Long thought of as a spectacular sight during the spring and fall migration to and from points north and south, Canada geese are now part of everyday life in cities and towns across the northern and central United States. They are generally regarded as providing ecological, educational, economic, recreational, and aesthetic benefits (Decker and Goff 1987), and there is enjoyment in knowing wildlife exists and contributes to the stability of natural ecosystems (Bishop 1987). Resident Canada geese, like all wildlife, provide citizens with a valuable contact with things wild and free. They contribute to the quality of life in Wisconsin cities and residential neighborhoods. Many people view Canada geese as a charismatic and highly valued species, however, individual tolerance of goose behavior differs (Smith et al. 1999). Because of their prolific nature, site tenacity, longevity, size, and tolerance of human activity, Canada geese can become problematic.

Giant Canada geese do not become sexually mature and breed until two or three years of age (Mississippi Flyway Council Technical Section 1996). The process whereby geese annually replace their primary and secondary wing flight feathers, and become flightless, is termed the molting process (Welty 1982). The molt for resident Canada geese in Wisconsin occurs from mid-June through mid-July. Portions of a flock of geese can be flightless from about one week pre- and two weeks post-molt due to the asynchronous molting by individual birds. It is known that non-breeding resident Canada geese and geese which have failed nesting attempts sometimes move to other areas in the summer prior to molting (Zicus 1981, Nelson and Oetting 1991, Abraham et al. 1999).

During 1948-64, only 29 Canada goose broods were reported statewide (excluding captive flocks), rarely more than one per county and seldom from the same sites in consecutive years (UWTF 1998). Since then, the number of counties with breeding geese increased from 24 in 1964 to 32 in 1980, and currently, geese breed in all 72 counties (UWTF 1998). The 2000 spring waterfowl survey in Wisconsin indicated a population of 102,600 birds (Appendix C Fig. 2). It is thought that the spring waterfowl survey methodology underestimates the number of geese in Wisconsin (J. Bergquist, WDNR, April, 2000, pers. comm.), and therefore, the statewide spring population goal has been exceeded. Currently, resident Canada goose spring populations are increasing statewide at an annual rate of 11% (R. Gatti, WDNR, April, 2000, pers. comm.). This rate of spring population increase is expected to continue with the current resident Canada goose management practices and result in a tripling of the spring population over the next 10 years (Appendix C Fig. 3).

The Giant Canada Goose Management Plan for Wisconsin (1993-2000) stated a spring population goal of 68,000 geese (WDNR 1994). The distribution of the population is not random across the state. Some areas still have vacant habitat and tolerance for population growth, while in other areas, especially in the more urbanized areas, these birds have become a serious nuisance to many residents.

By the early 1980s, some citizens in urban localities began experiencing nuisance problems and complain about Canada geese and the continued growth of urban nesting populations of Canada geese. Increasing populations of these resident geese are resulting in increasing numbers of conflicts with human activities (Conover and Chasko 1985), and increasing concerns related to human health and safety (Ankney 1996). The WDNR and WS have

recognized for a number of years that the populations of waterfowl are very desirable up to certain levels called the wildlife acceptance capacity (WAC) (Decker and Purdy 1988), but they often create problems for homeowners, business owners, airport operators, farmers and managers of public and private facilities (Appendix C Fig. 4, Wisconsin WS Annual Tables 1992-99). The majority of the conflicts have occurred in eastern and southern Wisconsin (Appendix C Fig. 5).

The WDNR began exploring ways to increase the annual harvest on local nesting Canada geese by modifying regular Canada goose hunting season dates to focus the harvest on resident birds rather than on the migrant population that nests along the coast of Hudson Bay and James Bay Mississippi Valley Population (MVP) of Canada geese (Bellrose 1976). In addition, WDNR established an early September hunting season in 1990 with daily bag limits of three to five birds per day per hunter. This season occurs prior to the migration of significant numbers of MVP geese into Wisconsin. The early September Canada goose season added about 700-800 birds to the harvest annually from 1990-1993, doubled to more than 1,600 in 1994, increased nearly three times in 1995, and reached a record level (10,500 birds) in 1996 (Bergquist et al. 1999, Appendix C Fig. 6). It is anticipated that the harvest trend during the early September hunting season will continue to increase, but not at the rate observed in the early 1990's (J. Bergquist, WDNR, April, 2000, pers. comm.). The early Canada goose hunting season will be expanded statewide in 2000. While this additional hunting pressure is expected to increase in the harvest of resident Canada geese, it alone is not expected to reduce population densities of the birds to the (WAC) to reduce current damages and risks (J. Bergquist, WDNR, April, 2000, pers. comm.). Resident Canada geese composed 17% of the total harvest during regular goose in 1999, or about 11,076 geese (Bergquist et al. 2000).

In addition to increasing harvest through implementation of an early hunting season, the WDNR has relocated young of the year geese from the Green Bay area and southeast Wisconsin to under-utilized habitats primarily in northern Wisconsin (Appendix D Table 1) and provided adult birds to other states (Appendix D Table 2). WS also relocated young of the year geese from ██████ County (179) and ██████ County (87) in 1999. However, the relocation effort within the state is not expected to be permitted by the WDNR beyond the next few years, and in recent years other states have not been interested in receiving adult birds (J. Bergquist, WDNR, April, 2000, pers. comm.).

1.3.3 Wildlife Acceptance Capacity(WAC)

Human dimensions of wildlife management include identifying how people are affected by problems or conflicts with wildlife, attempting to understand people's reactions, and incorporating this information into policy and management decision making processes and programs (Decker and Chase 1997).

WAC is the maximum wildlife population level in an area that is acceptable to people (Decker and Purdy 1988). WAC is also known as the "cultural carrying capacity". These terms are important because they define the sensitivity of a local community to a specific wildlife species or problem. For any given damage situation, there will be varying thresholds by those directly and indirectly affected by the damage. This threshold of damage is a primary limiting factor in determining the WAC.

Biological carrying capacity is the land or habitat's limit for supporting healthy populations of wildlife without degradation to the animals' health or its environment over an extended period of time (Decker and Purdy 1988). While the biological carrying capacity for resident Canada geese in Wisconsin is substantially greater than the State's spring population goal of 68,000 birds, the WAC is lower. The WAC for resident Canada geese in Wisconsin appears to be about 5 - 20 birds for an 18-hole golf course or similar sized park (J. Weiskittel, WS pers. obs.) Conover and Chasko (1985) found a similar WAC for resident Canada geese at golf courses in Connecticut. Once this WAC is met or exceeded, people begin to implement population reduction methods to alleviate property damage, perceived human health or safety threats. The Canada goose WAC for other damage situations and resources is undetermined.

1.3.4 Need for RCGDM to Protect Human Health

Resident Canada goose conflicts may potentially impact human health. A foraging Canada goose defecates between 5.2 and 8.8 times per hour (Bedard and Gauthier 1986). Kear (1963 In Allan 1995) recorded a maximum fecal deposition rate for Canada geese of 0.39 pounds per day (dry weight). Some public swimming beaches in Wisconsin have documented a goose dropping per square foot of beach (J. Jackley, WDNR, July, 1999, pers. comm.). There are several pathogens involving waterfowl which may be contracted by humans, however, the risk of infection is believed low.

Cryptosporidiosis is a disease caused by the parasite (*Cryptosporidium parvum*) and was not known to cause disease in humans until as late as 1976 (Centers for Disease Control and Prevention (CDCP) 1998). A person can be infected by drinking contaminated water or direct contact with the droppings of infected animals (CDCP 1998). The public is advised to be careful when swimming in lakes, ponds, streams, and pools, and to avoid swallowing water while swimming (Colley 1996). The public is also advised to avoid touching stools of animals and to drink only safe water (Colley 1996). *Cryptosporidium* can cause gastrointestinal disorders (Virginia Department of Health 1995) and produce life-threatening infections in immunocompromised and immunosuppressed people (Roffe 1987, Graczyk et al. 1998). Cryptosporidiosis is recognized as a disease with implications for human health (Smith et al. 1997). Canada geese in Maryland were shown with molecular techniques to disseminate infectious *Cryptosporidium parvum* oocysts through mechanical means in the environment (Graczyk et al. 1998).

Giardiasis (*Giardia lamblia*) is an illness caused by a microscopic parasite that has become recognized as one of the most common causes of waterborne disease in humans in the United States during the last 15 years (CDCP 1999). Giardiasis is contracted by swallowing contaminated water or putting anything in your mouth that has touched the stool of an infected animal or person, and causes diarrhea, cramps and nausea (CDCP 1999). Canada geese in Maryland were shown with molecular techniques to disseminate infectious *Giardia* sp. cysts in the environment (Graczyk et al. 1998).

Salmonella (*Salmonella* spp.) may be contracted by humans by handling materials soiled with bird feces (Stroud and Friend 1987). *Salmonella* causes gastrointestinal illness, including diarrhea.

Chlamydia psittaci, which can be present in diarrhetic feces of infected waterfowl, can be transmitted if it becomes airborne (Locke 1987). Severe cases of Chlamydiosis have occurred among wildlife biologists and others handling snow geese, ducks, and other birds (Wobeser and Brand 1982). Chlamydiosis can be fatal to humans if not treated with antibiotics. Waterfowl, herons, and rock doves (pigeons) are the most commonly infected wild birds in North America (Locke 1987).

Escherichia coli (*E. coli*) are fecal coliform bacteria associated with fecal material of warm blooded animals. There are over 200 specific serological types of *E. coli* and the majority are harmless (Sterritt and Lester 1988). Probably the best known serological type of *E. coli* is *E. coli* O157:H7, which is a harmful *E. coli* usually associated with cattle (Gallien and Hartung 1994). This was the rationale for testing public water supplies that was developed in the United States and Europe at the turn of the century to reduce the incidence of waterborne diseases.

Regardless of whether the serological types of *E. coli* disseminated into watersheds by geese are proven to be harmful to humans, it has been demonstrated that Canada geese can disseminate *E. coli* into the environment and result in elevated fecal coliform densities in the water column (Hussong et al. 1979). Many communities monitor water quality at swimming beaches, but lack the financial resources to pinpoint the source of elevated fecal coliform counts. When fecal coliform counts at swimming beaches exceed established standards the beaches are temporarily closed adversely affecting the human quality of life, even though they may not have been able to determine the serological type of the *E. coli*. Many communities, such as the Cities of Milwaukee and Madison, monitor water quality at swimming beaches on a regular basis and regularly close some beaches, which receive high use by waterfowl, to public use because of elevated bacteria counts. Unfortunately, linking the elevated bacterial counts to

frequency of waterfowl use and attributing the elevated levels to human health threats has been problematic until recently. Advances in genetic engineering have allowed microbiologists to match genetic code of coliform bacteria to specific animal species and link these animal sources of coliform bacteria to fecal contamination (Jamieson 1998, Simmons et al. 1995). Simmons et al. (1995) used genetic fingerprinting to link fecal contamination of small ponds on Fisherman Island, Virginia to waterfowl. Microbiologists were able to implicate waterfowl and gulls as the source of fecal coliform bacteria at the Kensico Watershed, a water supply for New York City (Klett et al. 1998). Also, fecal coliform bacteria counts coincided with the number of Canada geese and gulls roosting at the reservoir. Re According to the Wisconsin Department of Health and Family Services (WDHFS), no surveillance or testing of recreational water bodies is being done in the state to examine the threat waterfowl may pose to human health, therefore potential health threats in Wisconsin are unknown (Jim Kazmierczak, WDHFS, April, 2000, pers. comm.).

While transmission of disease or parasites from geese to humans has not been well documented, the potential exists (Luechtefeld et al. 1980, Wobeser and Brand 1982, Hill and Grimes 1984, Pacha et al. 1988, Blandespoor and Reimink 1991, Graczyk et al. 1997, Saltoun, et al. 2000). In worst case scenarios, infections may even be life-threatening for immunocompromised and immunosuppressed people (Roffe 1987, Virginia Department of Health 1995, Graczyk et al. 1998). Even though many people are concerned about disease transmission from fecal droppings, the probability of contracting disease from fecal droppings is believed to be small. Financial costs related to human health threats involving resident Canada geese may include testing of water for coliform bacteria, cleaning and sanitizing beaches regularly of fecal droppings, contacting and obtaining assistance from public health officials, and implementing non-lethal and lethal methods of wildlife damage management. WS recognizes and defers to the authority and expertise of local and state health officials in determining what does or does not constitute a threat to public health.

1.3.5 Need for RCGDM to Protect Human Safety

Bird strikes cause an estimated seven fatalities and \$245 million damage to civilian and military aircraft each year (Linnell et al. 1996). Waterfowl (geese and ducks) comprise 35% of all bird-aircraft strikes and 12% of bird-aircraft strikes where civil aircraft were damaged (Cleary et al. 1997). No other bird species cause as many damaging bird-aircraft strikes as waterfowl, except gulls (Cleary et al. 1997). For example, three Canada goose - aircraft collisions at airports near New York City resulted in over \$15 million dollars in damage during 1995 (National Wildlife Research Center, Research Update, 1998). One of the collisions with the Air France Concorde and Canada geese in 1995 resulted in a lawsuit and an eventual \$5.3 million settlement against the ██████████ (Frank 1994). Also in 1995, a Boeing 707 E-38 AWACS jet taking off from Elmendorf Air Force Base in Alaska ingested at least 13 geese into the number 1 and 2 engines and crashed, killing all 24 crew members and destroying the \$184 million aircraft.

Canada geese are one of the more dangerous bird species for aircraft to strike because of their large size (up to 15 pounds) and because they travel in flocks of up to several hundred birds. The presence of resident Canada geese on and near airports creates a threat to aviation and human safety. At least thirteen goose strikes have occurred to aircraft in Wisconsin since 1992 according to the Federal Aviation Administrations Bird Strike Database. It is estimated that only 20 - 25% of all bird strikes are reported (Conover et al. 1995, Dolbeer et al. 1995, Linnell et al. 1996, Linnell et al. 1999), hence, the number of strikes involving Canada geese is likely greater than Federal Aviation Administration records show.

Geese aggressively defend their nests or goslings and may attack or threaten pets, children, and adults (Smith et al. 1999). WS records show that goose attacks on people are fairly common occurrences during the nesting season and can result in injuries (Wisconsin WS, unpubl. data). In 1996, a woman was attacked by a nesting pair of Canada geese in the parking lot of a business. The attack left her with a laceration on her head that required 5 stitches, a tetanus shot and antibiotics to recover (J. Weiskittel, Wisconsin WS, April, 2000, pers. comm.). On March 31, 2000 a woman was walking in ██████████ in ██████████, Wisconsin and was attacked by a nesting resident

Canada goose. The woman sustained injuries that left her bleeding profusely from the head and necessitated medical attention at the St. Agnes Hospital, where she was treated and released (Reinsch 2000, [REDACTED] Fire Dept. 2000).

Slipping hazards can be caused by the buildup of fecal matter from geese on docks, walkways, and other foot traffic areas. Injuries resulting from these types of hazards have resulted in litigation (Missouri WS, unpub. data). Elderly people are especially vulnerable to broken bones if they slip and fall or are knocked down by geese. They are also more vulnerable to medical complications from such injuries. In some situations, geese have nearly drowned dogs which were being used as a non-lethal method of harassment to disperse birds from the area (Wisconsin WS, unpubl. data). WS records show traffic hazards result from geese straying onto busy streets and highways and can result in accidents as vehicles stop suddenly or swerve to miss them (Wisconsin WS, unpubl. data). Financial costs related to human safety threats involving resident Canada geese may include missing connecting flights or departure and arrival times of commercial aircraft, personal injuries, aircraft repairs, and vehicle repairs.

1.3.6 Need for RCGDM to Protect Property

The management of resident Canada goose damage to protect human health, human safety, and property (including agricultural crops) invariably leads to a better quality of life for affected parties. WS is not legislatively mandated to protect quality of life, but it is accomplished as a secondary benefit through IWDM practices.

Research on human landscape preference has revealed that humans have a strong predilection, some assert an innate preference, for savannas with water (Cooper, in press^a). Cooper (in press^a) also reported that like humans, but evolutionarily much earlier, Canada geese evolved to use the savanna landscape because the setting offered ample foraging opportunities, a high predator detection likelihood, and ready escape into nearby water. This preference for similar habitats has resulted in the increasing level of conflicts between humans and resident Canada geese.

Soil erosion and sedimentation can cause damage to property. Excessive numbers of Canada geese can remove shoreline vegetation resulting in erosion of the shoreline and soil sediments being carried by rainwater into lakes, ponds and reservoirs. Geese may also cause damage to landscaping, piers, yards, boats, beaches, shorelines, parks, golf courses, landscaping, driveways, athletic fields, ponds, lakes, rafts, porches, patios, gardens, foot paths, swimming pools, swimming pool shower facilities, play grounds, school grounds, and cemeteries (Appendix C Fig. 4, Wisconsin WS Annual Tables 1992-1999). Damage reported through technical assistance generally is not verified by WS. The majority of complainants that contact WS for assistance describe a general decline in their quality of life due to local overabundance of geese. People reported being unable to use and enjoy their own property, public parks, and other areas because of goose droppings. An annual Easter egg hunt for children has been discontinued in one community because of the buildup of goose droppings in the park where the event was held ([REDACTED], February, 2000, pers. comm.). Goose feces tracked into homes, restaurants, cafeterias, schools, offices, daycare centers, and stores have contaminated and damaged these facilities (Wisconsin WS Annual Tables 1992-1999).

The costs of reestablishing over-grazed lawns and cleaning goose droppings from sidewalks have been estimated at more than \$60 per bird (Allan et al. 1995). WS has also received complaints about geese damaging/destroying recently planted aquatic vegetation in ponds.

Nutrient loading has been found to increase in wetlands in proportion to increases in the numbers of roosting geese (Mitchell et al. 1999, Manny et al. 1994). In studying the relationship between bird density and phosphorus (P) and nitrogen (N) levels in Bosque del Apache National Wildlife Refuge in New Mexico, Mitchell et al. (1999) found an increase in the concentration of both P and N correlated with an increase in bird density. Scherer et al. (undated) stated that waterfowl metabolize food very rapidly and most of the phosphorus contributed by bird feces probably originates from sources within a lake being studied. In addition, assimilation and defecation converted the

phosphorus into a more soluble form and, therefore was considered a form of internal loading. Waterfowl have contributed substantial amounts of P and N into lakes through feces creating excessive aquatic macrophyte growth and algae blooms (Scherer et al. undated) and accelerated eutrophication through nutrient loading (Harris et al. 1981)

In Wisconsin, farmers who sustain damage to their agricultural crops caused by Canada geese are eligible for assistance in preventing/reducing losses and for financial compensation for the losses through the Wisconsin Wildlife Damage Abatement and Claims Program (WDACP). WS conducted 1108 visits to sites receiving resident Canada goose damage from 1992-1999. To determine goose damage to crops for this program, each crop field sustaining damage is examined and a thorough on-site damage appraisal is conducted (ss. 29.889 (7a), Wis. Stats.). WDACP appraised crop damage to wheat, hay, corn, soybeans from resident geese in 1999 primarily occurred in the southern and eastern 31 counties of Wisconsin and exceeded \$40,000 (Appendix C Fig. 7). However, this loss is likely an underestimate of total damage to agricultural crops because damages resulting from Canada geese are only appraised by the WDACP on less than 0.04% of the farms in Wisconsin.

1.3.7 Summary of the Need for Action

As is described above, the increasing population of resident Canada geese has or may cause conflicts with human health, human safety, property and quality of life. Because of the potential threat to free-ranging waterfowl, the American Association of Wildlife Veterinarians (AAWV) put forth the following resolution (AAWV, undated):

“...wild and semi-domestic ducks, geese and swans are susceptible to and carriers of disease and parasites of free-ranging wild ducks, geese, and other birds;...”

“...the AAWV encourages local authorities and state and federal agencies to cooperate to limit the population of waterfowl on urban water areas to prevent disease outbreaks in semi-domestic as well as free-ranging ducks, geese and swans and discourages the practice of relocating nuisance or excess urban ducks, geese and swans to other parks or wildlife areas as a means of local population control.”.

1.4 STAKEHOLDER INVOLVEMENT IN RCGDM IN SELECTING A DAMAGE MANAGEMENT PROGRAM

1.4.1 Prior Citizen Involvement in Addressing RCGDM

The Wisconsin process of citizen involvement in addressing waterfowl conflicts began in 1996 with the Wisconsin Urban Waterfowl Task Force (UWTF). This approach has been used successfully in wildlife management situations in New York, Minnesota, and other states. In Wisconsin, urban deer management, statewide deer management, and other topics have been greatly assisted by task force reports. The UWTF represented a wide range of interests including municipal government, real estate managers, parks departments, animal rights, animal welfare, wildlife educators, golf courses, Wisconsin Lakes Association, Wisconsin Farm Bureau, Audubon Council, Wisconsin Society for Ornithology, Wisconsin Wildlife Federation, Wisconsin Conservation Congress, hunters, and the WDNR. Dr. Scott R. Craven, Professor of Wildlife Ecology and Extension Wildlife Specialist at the University of Wisconsin-Madison, was selected by the WDNR to serve as facilitator for the meeting and the subsequent task force process. The UWTF identified the following waterfowl problems as issues for Wisconsin:

- Fecal contamination of lawns, parks, docks, golf courses, beaches, and other sites.
- Water quality concerns (for swimming and/or drinking) primarily from fecal contamination.
- Aggressive behavior, especially during the breeding season.
- Interference with human activities such as picnics, swimming, golf, etc.
- Aircraft/airport safety concerns.
- Excessive concentrations increasing risk of avian disease transmission (within waterfowl or between other birds).
- Erosion and site damage (grazing of vegetation) at concentration areas.

As a whole, the UWTF recognized and acknowledged the problems caused by waterfowl. However, there was not complete agreement on the degree of the problems and whether or not damage management activities were justified. This was reflected in subsequent voting.

UWTF discussion centered around the list of available methods of management which were divided into two categories; waterfowl population control (generally lethal) and on-site problem management activities (generally non-lethal). Only legal methods of damage management were discussed, including: Population Control (relocation, round-up (capture) and removal, egg manipulation, reproductive inhibition (sterilization), hunting opportunity) and Site Management (“no feeding” ordinances, scare tactics, trained dogs, repellents, barriers, habitat modification).

These management alternatives were all described by technical experts who covered the application costs, efficacy, legal considerations, and general advantages and disadvantages of each. A “do nothing” alternative was also discussed. However, the UWTF considered the nature and magnitude of the reported problems and rejected the “do nothing” alternative in favor of active management. Advantages, disadvantages, and concerns of each management method were discussed by the UWTF. The UWTF recommendation on each method was as follows:

-Non-lethal On-site Management- “That a no feeding regulation or ordinance would be the first step, the second step would be the scare tactics and repellents, third would be the habitat modification, and forth would be relocation with the understanding and wording that the sequence in which they are approached may vary from site to site.”

-Egg Treatment- that egg treatment is a viable management option.

-Hunting Opportunity-Recommended “That the UWTF endorse the early September goose hunting season as a method to help reduce local goose populations to desired levels.”

-Natural Predators- “That populations of natural waterfowl nest predators wherever culturally and ecologically plausible be encouraged.” Motion Failed, No recommendation.

-Sterilization- Recognized that surgical sterilization is not a viable technique for widespread use in waterfowl management at this time.

-Relocation- that “...should be the first option in the population management group.”

-Round Up and Removal- “...that as a method of disposition, the processing of Canada geese and/or urban waterfowl for food pantries is recommended....that before birds are distributed, Food and Drug Administration (FDA) or other suitable approval was necessary, so that there was no risk to people consuming them..... that costs associated with potential food testing, if any ever arise, would be included in the costs born by the complainant.”

It was clear that the UWTF favored non-lethal approaches first, but recognized that in some circumstances non-lethal approaches were not practical to resolve problems.

1.4.2 Community Based Selection of a RCGDM Program

1.4.2.1 Technical Assistance Provided by WS to Resource Owners for Selection of a RCGDM Program

The WS program in Wisconsin follows the “Co-managerial approach” to solve wildlife damage or conflicts as described by Decker and Chase (1997). Within this management model, WS provides technical assistance regarding the biology and ecology of Canada geese and effective, practical, and reasonable methods available to reduce goose damage to local requesters. This includes non-lethal and lethal methods. Technical assistance on alleviating damage caused by resident Canada geese is also available from WDNR and University of Wisconsin Extension Service. WS and other state and federal wildlife or wildlife damage management agencies may facilitate discussions at local community meetings when resources are available. Resource owners/managers and others directly affected by goose damage or conflicts in Wisconsin have direct input into the resolution of such problems. They may implement management recommendations provided by WS or others, or may request management assistance from WS, other wildlife management agencies, local animal control agencies, or private businesses or organizations.

Local authorities decide which methods should be used to solve a wildlife-human conflict. These decision makers include community leaders, private property owners/managers, and public property owners/managers.

1.4.2.2 Community Selection of a RCGDM Program

The authority that selects damage management actions for the local community might be a mayor, city council, common council, park board, or for a homeowner or civic association would be the President or the President's or Board's appointee. These individuals are often times popularly elected residents of the local community who oversee the interests and business of the local community. These individuals would represent the local community's interest and make decisions for the local community or bring information back to a higher authority or the community for discussion and decision making. Identifying the authority that selects damage management actions for local business communities is more complex because the lease may not indicate whether the business must manage wildlife damage themselves, or seek approval to manage wildlife from the property owner or manager, or from a governing board. WS would provide technical assistance to the local community or local business community authority(ies) and recommendations to reduce damage. Direct damage management would be provided by WS if requested by the local community authority, funding was provided, and the requested direct damage management was consistent with WS recommendations, policy and federal and state laws.

1.4.2.3 Private Property Selection of a RCGDM Program

When one person privately owns a parcel of property, the authority selecting the damage management plan would be him or herself. WS would provide technical assistance and recommendations to this person to reduce damage. If no homeowner or civic association represents the affected resource owners of the local community, then WS would provide technical assistance to the self or locally appointed authority(ies). Direct damage management would be provided by WS if requested, funding was provided, and the requested direct damage management was consistent with WS recommendations, policy and federal and state laws. Additionally, a minimum of 67% of the affected resource owners must agree to the direct damage management. The affected resource owners would be those whose property is adjacent to the water body where the Canada geese primarily inhabit or damage resources. Affected resource owners who disagree with the direct damage management may request WS not conduct this action on their property and WS will honor this request.

1.4.2.4 Public Property Selection of a RCGDM Program

The authority selecting the damage management plan for local, state, or federal property would be the official responsible for or authorized to manage the public land to meet interests, goals and legal mandates for the property. WS would provide technical assistance and recommendations to this person to reduce damage. Direct damage management would be provided by WS if requested, funding was provided, and the requested direct damage management was consistent with WS recommendations, policy and federal and state laws.

1.4.2.5 Summary for Community Selection of a RCGDM Program

This process for involving local communities and local stakeholders in the decisions for resident goose damage management assures that local concerns are considered before individual damage management actions are taken.

1.5 RELATIONSHIP OF THIS ENVIRONMENTAL ASSESSMENT TO OTHER ENVIRONMENTAL DOCUMENTS

WS has issued a Final Environmental Impact Statement on the national WS program (USDA 1994). This EA is tiered to USDA (1994). Pertinent information available in USDA (1994) has been incorporated by reference into this EA. The USFWS is currently conducting an nationwide analysis of resident Canada goose population impacts and considering alternative approaches to permitting the control of damage caused by geese on local and regional bases.

1.6 DECISION TO BE MADE

Based on the scope of this EA, the decisions to be made are:

- I. Should WS implement a RCGDM program in Wisconsin?
- II. If not, how should WS fulfill its legislative responsibilities for Management of Conflicts Associated with Resident Canada Geese in Wisconsin?
- III. Might the proposed WS RCGDM program have significant impacts requiring preparation of an EIS?

1.7 SCOPE OF THIS ENVIRONMENTAL ASSESSMENT ANALYSIS

1.7.1 Actions Analyzed

This EA evaluates resident Canada goose damage management by WS to protect human health, human safety, property and agriculture on private land or public facilities whenever or wherever such management is requested from the WS program.

1.7.2 Period for Which this EA is Valid

This EA will remain valid until WS determines that new needs for action or new alternatives having different environmental effects must be analyzed. At that time, this analysis and document will be reviewed and revised as necessary. This EA will be reviewed each year to ensure that it is complete and still appropriate to the scope of the state RCGDM activities.

1.7.3 Site Specificity

This EA analyzes potential impacts of WS's RCGDM activities that will occur or could occur at private property sites or at public facilities typically in thirty-one counties in southern and eastern Wisconsin including

[REDACTED] (Appendix C Fig. 1). These thirty-one counties comprise the region in Wisconsin that the WDNR has attempted to increase harvest of resident geese causing damage through the implementation of an early Canada goose hunting season since 1996. There has been an early hunting season to focus harvest on resident Canada geese in Wisconsin since 1990. The counties where the early hunting season occurs has continually expanded since its inception, and the early hunting season will be expanded statewide in 2000. Because the proposed action is to implement a IWDM RCGDM program, and because Wisconsin WS program's goals and responsibilities are to provide service when requested within the constraints of available funding and personnel, it is conceivable that RCGDM activities by WS could occur anywhere in these thirty-one counties (Appendix C Fig. 1). Thus, this EA analyzes the potential impacts of such efforts primarily whenever they occur in the 31 counties, as part of the proposed program. However, conflict requests for assistance may occur anywhere and anytime in Wisconsin and it is WS's responsibility to respond to each request. The EA emphasizes significant issues as they relate to specific areas whenever possible. However, the issues that pertain to the various types of resident Canada goose damage and resulting management are the same, for the most part, wherever they occur, and are treated as such. The standard WS Decision Model (Slate et al. 1992) and WS Directive 2.105 is the routine thought process that is the site specific procedure for determining methods and strategies to use or recommend for individual actions conducted by WS (See USDA 1994, Chapter 2 and Appendix N for a more complete description of the WS Decision Model and examples of its application). Decisions made using this thought process will be in accordance with any mitigation measures and standard operating procedures described herein and adopted or established as part of the decision.

1.8 AUTHORITY AND COMPLIANCE

1.8.1 Authority of Federal and State Agencies in RCGDM in Wisconsin

(See Chapter 1 of USDA (1994) for a complete discussion of federal laws pertaining to WS)

1.8.1.1 WS Legislative Authority

The primary statutory authority for the WS program is the Animal Damage Control Act of 1931 (7 U.S.C. 426426c;

46 Stat. 1468), which provides that:

The Secretary of Agriculture is authorized and directed to conduct such investigations, experiments, and tests as he may deem necessary in order to determine, demonstrate, and promulgate the best methods of eradication, suppression, or bringing under control on national forests and other areas of the public domain as well as on state, Territory or privately owned lands of mountain lions, wolves, coyotes, bobcats, prairie dogs, gophers, ground squirrels, jackrabbits, brown tree snakes and other animals injurious to agriculture, horticulture, forestry, animal husbandry, wild game animals, furbearing animals, and birds, and for the protection of stock and other domestic animals through the suppression of rabies and tularemia in predatory or other wild animals; and to conduct campaigns for the destruction or control of such animals. Provided that in carrying out the provisions of this Section, the Secretary of Agriculture may cooperate with states, individuals, and public and private agencies, organizations, and institutions."

Since 1931, with the changes in societal values, WS policies and programs place greater emphasis on the part of the Act discussing "bringing (damage) under control," rather than "eradication" and "suppression" of wildlife populations. In 1988, Congress strengthened the legislative authority of WS with the Rural Development, Agriculture, and Related Agencies Appropriations Act. This Act states, in part:

"That hereafter, the Secretary of Agriculture is authorized, except for urban rodent control, to conduct activities and to enter into agreements with states, local jurisdictions, individuals, and public and private agencies, organizations, and institutions in the control of nuisance mammals and birds and those mammal and bird species that are reservoirs for zoonotic diseases, and to deposit any money collected under any such agreement into the appropriation accounts that incur the costs to be available immediately and to remain available until expended for Animal Damage Control activities."

In Wisconsin, the WS program has staffed toll-free, nuisance wildlife telephone lines to provide free technical assistance to Wisconsin residents requesting advice on ways to minimize/reduce Canada goose damage. The toll-free, nuisance wildlife telephone line numbers are published in telephone directories throughout the state.

1.8.1.2 U.S. Fish and Wildlife Service (USFWS)

The USFWS is responsible for managing and regulating take of bird species that are listed as migratory under the MBTA and those that are listed as T&E species under the ESA. Sections 1.8.2.2 and 1.8.2.3 below describe WS's interactions with the USFWS under these two laws. Under the permitting application process, the USFWS requires applicants to define prior non-lethal damage abatement techniques that have been used.

1.8.1.3 Wisconsin Department of Natural Resources Legislative Authority

The WDNR, under the direction of the Governor appointed Natural Resources Board, is specifically charged by the Legislature with the management of the state's wildlife resources. Although many legal authorities of the Natural Resources Board and the Department are expressed throughout Wisconsin Administrative Code, the primary statutory authorities include establishment of a system to protect, develop and use the forest, fish and game, lakes, streams, plant life, flowers, and other outdoor resources of the state (s. 23.09 Wis. Stats.) and law enforcement authorities (s. 29.001 and s. 29.921 Wis. Stats.). The Natural Resources Board adopted mission statements to help clarify and interpret the role of WDNR in managing natural resources in Wisconsin. They are:

- To protect and enhance our natural resources: our air, land and water; our wildlife, fish and forests and the ecosystems that sustain all life.
- To provide a healthy sustainable environment and a full range of outdoor opportunities.
- To ensure the right of all people to use and enjoy these resources in their work and leisure.
- To work with people to understand each other's views and carry out the public will.
- And in this partnership consider the future and generations to follow.

1.8.2 Compliance with Other Federal Laws

Several other federal laws authorize, regulate, or otherwise affect WS wildlife damage management. WS complies with these laws, and consults and cooperates with other agencies as appropriate.

1.8.2.1 National Environmental Policy Act (NEPA)

WS prepares analyses of the environmental impacts of program activities to meet procedural requirements of this law. This EA meets the NEPA requirement for the proposed action in Wisconsin. When WS direct management assistance is requested by another federal agency, NEPA compliance is the responsibility of the other federal agency. However, WS could agree to complete NEPA documentation at the request of the other federal agency.

1.8.2.2 Endangered Species Act (ESA)

It is federal policy, under the ESA, that all federal agencies shall seek to conserve T&E species and shall utilize their authorities in furtherance of the purposes of the Act (Sec.2(c)). WS conducts Section 7 consultations with the USFWS to use the expertise of the USFWS to ensure that "*any action authorized, funded or carried out by such an agency . . . is not likely to jeopardize the continued existence of any endangered or threatened species . . . Each agency shall use the best scientific and commercial data available*" (Sec.7(a)(2)). WS obtained a Biological Opinion (B.O.) from USFWS in 1992 describing potential effects on T&E species and prescribing reasonable and prudent measures for avoiding jeopardy (USDA 1994, Appendix F). In addition, WS has received concurrence from the USFWS and the WDNR with our determination that the proposed action would not affect T&E species (J. Smith Infor. Section 7 Consul. Letter to J. Maestrelli June 13, 2000, S. Holtz Infor. Consul. Letter to J. Maestrelli June 16, 2000).

1.8.2.3 Migratory Bird Treaty Act of 1918 (U.S.C. 703-711: 40 Stat. 755), as amended

The MBTA provides the USFWS regulatory authority to protect families of birds that contain species which migrate outside the United States. The law prohibits any "*take*" of these species by private entities, except as permitted by the USFWS; therefore the USFWS issues permits to private entities for reducing bird damage. A litigation position issued in 1997 by the U.S. Justice Department (DOJ) is that federal agencies are not subject to the MBTA procedural requirements for permits. The Department of Interior Solicitor's Office interpreted this position to mean the USFWS is no longer authorized to issue permits to federal agencies for the take of migratory birds. WS's interim guidance subsequently has been to allow the conduct of actions that were previously covered by USFWS permits and to notify the USFWS when conducting RCGDM actions that involve species for which permits were formerly required to assure their concerns are considered. A more recent ruling by the U.S. District Court of Columbia conflicts with the DOJ position, and the USDA Office of General Council has advised WS to once again apply for and obtain MBTA permits. Unless and until further court rulings determine otherwise, WS will obtain MBTA permits covering RCGDM activities that involve the taking of species for which such permits are required in accordance with the MBTA and USFWS regulations, or will operate as a named agent on MBTA permits obtained by cooperators.

In some situations WS provides onsite assessments for persons experiencing migratory bird damage to obtain information on which to base damage management recommendations. Damage management recommendations could be in the form of technical assistance or direct management assistance. In severe cases of resident Canada goose damage, WS provides recommendations to the USFWS for the issuance of depredation permits to private entities. The responsibility for issuing such permits rests with the USFWS.

1.8.2.4 Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

FIFRA requires the registration, classification, and regulation of all pesticides used in the United States. The U. S. Environmental Protection Agency (EPA) is responsible for implementing and enforcing FIFRA. All pesticides used by the WS program in Wisconsin are registered with and regulated by the EPA and Wisconsin Department of Agriculture, Trade and Consumer Protection, and are used by WS in compliance with labeling procedures and requirements. No toxicants are currently used or registered for use in managing geese or reducing goose damage. The repellents ReJeX-iT AG-36™ and FlightControl™ are registered for use in reducing goose damage to

vegetation in Wisconsin. The use of these products must be permitted by the WDNR.

1.8.2.5 Investigational New Animal Drug (INAD)

The drug alpha-chloralose (AC) has been used as a sedative for animals and is registered with the (FDA) capture waterfowl, coots, and pigeons. FDA approval for use under INAD (21 CFR, Part 511) authorized WS to use the drug as a non-lethal form of capture. The drug can only be purchased from WS.

1.8.2.6 National Historic Preservation Act (NHPA) of 1966, as amended

The National Historic Preservation Act (NHPA) of 1966, and its implementing regulations (36 CFR§800), requires federal agencies to: 1) determine whether activities they propose constitute "undertakings" that can result in changes in the character or use of historic properties and, 2) if so, to evaluate the effects of such undertakings on such historic resources and consult with the State Historic Preservation Office regarding the value and management of specific cultural, archaeological and historic resources, and 3) consult with appropriate American Indian Tribes to determine whether they have concerns for traditional cultural properties in areas of these federal undertakings. WS actions on tribal lands are only conducted at the tribe's request and under signed agreement; thus, the tribes have control over any potential conflict with cultural resources on tribal properties. WS activities as described under the proposed action do not cause ground disturbances nor do they otherwise have the potential to significantly affect visual, audible, or atmospheric elements of historic properties and are thus not undertakings as defined by the NHPA. RCGDM could benefit historic properties if such properties were being damaged by geese. In those cases, the officials responsible for management of such properties would make the request and would select the methods to be used in their RCGDM program. Harassment techniques that involve noise making could conceivably disturb users of historic properties if they were used at or in close proximity to such properties; however, it would be an exceedingly rare event for noise producing devices to be used in close proximity to such a property unless the resource being protected from goose damage was the property itself, in which case the primary effect would be beneficial. Also, the use of such devices is generally short term and could be discontinued if any conflicts with historic properties arose. WS has determined RCGDM actions are not undertakings as defined by the NHPA because such actions do not have the potential to result in changes in the character or use of historic properties. A copy of this EA has been provided to the Great Lakes Indian Fish and Wildlife Commission to allow them an opportunity to express any concerns that might need to be addressed prior to a decision.

1.8.2.7 Environmental Justice and Executive Order 12898 *"Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations."*

Executive Order 12898, entitled, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" promotes the fair treatment of people of all races, income levels and cultures with respect to the development, implementation and enforcement of environmental laws, regulations and policies.

Environmental justice is the pursuit of equal justice and protection under the law for all environmental statutes and regulations without discrimination based on race, ethnicity, or socioeconomic status. It is a priority within APHIS and WS. Executive Order 12898 requires federal agencies to make environmental justice part of their mission, and to identify and address disproportionately high and adverse human health and environmental effects of federal programs, policies and activities on minority and low-income persons or populations.

APHIS implements Executive Order 12898 principally through its compliance with NEPA. All WS activities are evaluated for their impact on the human environment and compliance with Executive Order 12898. WS personnel use only legal, effective, and environmentally safe wildlife damage management methods, tools, and approaches. It is not anticipated that the proposed action would result in any adverse or disproportionate environmental impacts to minority and low-income persons or populations. In fact, providing processed goose meat products at no cost to food shelf operations within Wisconsin will benefit and low-income persons or populations who receive services provided by such operations.

1.8.2.8 Protection of Children from Environmental Health and Safety Risks (Executive Order 13045)

Children may suffer disproportionately for many reasons from environmental health and safety risks, including the development of their physical and mental status. Because WS makes it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children, WS has considered the impacts that this proposal might have on children. The proposed RCGDM would occur by using only legally available and approved methods where it is highly unlikely that children would be adversely affected. For these reasons, WS concludes that it would not create an environmental health or safety risk to children from implementing this proposed action.

1.8.3 Compliance with Other State Laws

1.8.3.1 Removal of Wild Animals and Authorization to Remove Wild Animals Causing Damage or Nuisance

The statute s. 29.885 Wis. Stats., grants WDNR the authority to authorize the removal of wild animals causing damage or causing a nuisance. WDNR s. NR 12.10, Wis. Adm. Code is established to administer s. 29.885, Wis. Stats., relating to the removal of wild animals causing damage or nuisance. This administrative rule defines criteria whereby landowner, lessees, or occupants may remove from lands under their control wild animals constituting a nuisance. WS assistance to cooperators in reducing goose damage which could involve the removal of resident Canada geese would be conducted under authority granted to WS, or WS cooperators, by the WDNR.

1.9 PUBLIC INVOLVEMENT

Fifty-five state and federal agencies, organizations (including tribal organizations), businesses, and individuals were mailed a letter in January-February 2000 soliciting comments, issues, and concerns for a 30 day comment period for and EA about managing damage involving resident Canada geese. The public was also notified of a 30-day comment period on the pre-decisional EA through publication of a legal notice on May 3, 2000 through May 5, 2000 in the Milwaukee Journal Sentinel. These notices were consistent with APHIS NEPA procedures and allowed interested parties the opportunity to obtain and review the document and comment on the proposed action.

All respondents to the public involvement process, who provided their postal service mailing address, and all persons requesting a document, who provided their postal service mailing address, received the pre-decisional EA. Ninety-two pre-decisional EA's were provided to the public. The 30-day comment period, closed on June 2, 2000, however comments were accepted until a decision was made. Fifty-six letters, faxes and/or e-mail messages providing comments were received.

2.0 CHAPTER 2: AFFECTED ENVIRONMENT AND ISSUES

Chapter 2 contains a discussion of the issues, including issues that received detailed environmental impact analysis in Chapter 4 (Environmental Consequences), issues that have driven the development of mitigation measures and/or standard operating procedures, and issues not considered in detail, with rationale. Pertinent portions of the affected environment will be included in this chapter in the discussion of issues used to develop mitigation measures. Additional affected environments are incorporated into the discussion of the environmental impacts in Chapter 4 and the description of the current program in Chapter 3.

2.1 AFFECTED ENVIRONMENT

The areas of the proposed action include but are not limited to property on or adjacent to airports, golf courses, athletic fields, recreational areas, swimming beaches, parks, corporate complexes, subdivisions, businesses, industrial parks, schools, agricultural areas, and cemeteries in Wisconsin. The proposed action may be conducted on properties held in private, local, state or federal ownership.

2.2 ISSUES

The following issues have been identified as areas of concern requiring consideration in this EA. These will be analyzed in detail in Chapter 4:

- I. Effects on Canada Geese Populations

- II. Effectiveness of RCGDM
- III. Effects on Aesthetics
- IV. Humaneness and Animal Welfare Concerns of Methods Used by WS
- V. Effects on Non-target Wildlife Species Populations, Including T&E Species

2.3 ISSUES ADDRESSED IN THE ANALYSES OF ALTERNATIVES

2.3.1 Effects on Canada Geese Populations

A common concern among members of the public is whether wildlife damage management actions adversely affect the viability of target species populations. The target species analyzed in this EA are resident Canada geese of which no more than 3000 geese would be removed or relocated in a given year. This represents only 3% of the current resident goose spring population in Wisconsin being affected as a result of WS's management methods under the proposed action in any one year, as analyzed in Chapter 4.

2.3.2 Effectiveness of Methods of RCGDM

Another common concern among members of the public is whether the methods of reducing wildlife damage will be effective in reducing or alleviating the damage/conflict. The effectiveness of each alternative can be defined in terms of decreased potential for health risks, decreased human safety hazards, reduced property damage, and improved quality of life.

2.3.3 Affects on Aesthetic Values

Aesthetics is the philosophy dealing with the nature of beauty, or the appreciation of beauty. Therefore, aesthetics is truly subjective in nature, dependent on what an observer regards as beautiful.

Wildlife generally is regarded as providing economic, recreational, and aesthetic benefits (Decker and Goff 1987), and the mere knowledge that wildlife exists is a positive benefit to many people. However, wildlife may also be responsible for adverse affects to people. The activities of some wildlife result in economic losses to agriculture and damage to property. Human safety is jeopardized by wildlife collisions with aircraft and automobiles, aggressive goose behavior may result in human injury, and wild animals may harbor diseases transmissible to humans.

Wildlife populations provide a range of social and economic benefits (Decker and Goff 1987). These include direct benefits related to consumptive and non-consumptive use (e.g., wildlife-related recreation, observation, harvest, sale), indirect benefits derived from vicarious wildlife related experiences (e.g., reading, television viewing), and the personal enjoyment of knowing wildlife exists and contributes to the stability of natural ecosystems (e.g., ecological, existence, bequest values) (Bishop 1987). Positive values of wildlife would also include having enough wildlife to view, but also to enjoy the aesthetics of the local environment without excessive animal excrement or loss of vegetation (lawns and flower gardens) due to wildlife feeding on plants.

However, the same wildlife populations that are enjoyed by many could also create conflicts with a number of land uses and human health and safety. The activities of some wildlife, such as white-tailed deer and Canada geese, result in economic losses to agriculture and damage to property (Wisconsin WS Annual Tables, 1992-1999). Human safety is jeopardized by wildlife collisions with aircraft and automobiles, and wild animals may harbor diseases transmissible to humans. Predation by, or to, wildlife species that have special status, such as T&E species, is a public concern. Certain species of wildlife can be regarded as a nuisance in certain settings. Excessive numbers of wildlife can ruin the aesthetic appearance and enjoyment of some recreational activities because of excessive fecal droppings or disruption of vehicle traffic.

Direct benefits are derived from a user's personal relationship to animals and may take the form of direct consumptive use (using up the animal or intending to) or non-consumptive use (viewing the animal in nature, a zoo, or for photography) (Decker and Goff 1987). Indirect benefits or indirectly exercised values arise without the user being in direct contact with the animal and come from experiences as looking at photographs and films of wildlife,

reading about wildlife, or benefitting from activities or contributions of animals such as their use in research (Decker and Goff 1987). Indirect benefits come in two forms: bequest and pure existence (Decker and Goff 1987). Bequest is providing for future generations and pure existence is merely knowledge that the animals exist (Decker and Goff 1987).

Public reaction is variable and mixed among people because there are numerous philosophical, aesthetic, and personal attitudes, values, and opinions about the best ways to reduce conflicts/problems between humans and wildlife. Population management (egg destruction, capture and relocation, capture and processing human consumption, and shooting) methods provide relief from damage to property or threats to human safety for those whom would have no relief from such damage or threats if non-lethal methods were ineffective or impractical. Many people directly affected by damage to property and threats to human safety caused by resident Canada geese insist upon their removal from the property or public location when the WAC is reached or exceeded. Some people have the opinion that resident Canada geese should be captured and relocated to a rural area to alleviate damage or threats to human safety. Some people directly affected by the damage from resident Canada geese strongly oppose removal of the birds regardless of the amount of damage. Individuals not directly affected by the harm or damage may be supportive, neutral, or totally opposed to any removal of resident Canada geese from specific locations or sites. Some of the totally opposed people want WS to teach tolerance for goose damage and threats to human health or safety, and that geese should never be killed. Some of the people who oppose removal of geese do so because of human-affectionate bonds with individual geese. These human-affectionate bonds are similar to attitudes of a pet owner and result in aesthetic enjoyment.

Some individual members or groups of wildlife species habituate and learn to live in close proximity to humans. Some people in these situations feed such wildlife and/or otherwise develop emotional attitudes toward such animals that result in aesthetic enjoyment. In addition, some people consider individual wild birds as "pets," or exhibit affection toward these animals. Examples would be people who visit a city park to feed waterfowl or pigeons and homeowners who have bird feeders or bird houses. Many people do not develop emotional bonds with individual wild animals, but experience aesthetic enjoyment from observing them.

Property owners that have populations of resident Canada geese above their identified WAC are generally concerned about the negative aesthetic appearance of bird droppings and property damage to landscaping and turf. Managers of golf courses, swimming beaches and athletic fields are particularly concerned because negative aesthetics can result in lower public use. Costs associated with property damage include labor and disinfectants to clean and sanitize the area, loss of property use, loss of aesthetic value of plants, gardens, aquatic vegetation, and lawns where geese feed and loaf, loss of customers or visitors irritated by having to walk on fecal droppings, and loss of time contacting wildlife management agencies on health and safety issues and damage management advice, and implementation of non-lethal and lethal wildlife management methods.

2.3.4 Humaneness and Animal Welfare Concerns of Methods used by WS

The issue of humaneness and animal welfare, as it relates to the killing or capturing of wildlife is an important but very complex concept that can be interpreted in a variety of ways. Schmidt (1989) indicated that vertebrate pest damage management for societal benefits could be compatible with animal welfare concerns, if "*... the reduction of pain, suffering, and unnecessary death is incorporated in the decision making process.*"

Suffering is described as a "*... highly unpleasant emotional response usually associated with pain and distress*" (AVMA 1987). However, suffering "*... can occur without pain ...*," and "*... pain can occur without suffering . . .*" (AVMA 1987). Because suffering carries with it the implication of a time frame, a case could be made for "*... little or no suffering where death comes immediately ...*" (CDFG 1991), such as shooting.

Defining pain as a component in humaneness of WS methods appears to be a greater challenge than that of suffering. Pain obviously occurs in animals. Altered physiology and behavior can be indicators of pain, and

identifying the causes that elicit pain responses in humans would ". . . *probably be causes for pain in other animals . . .*" (AVMA 1987). However, pain experienced by individual animals probably ranges from little or no pain to significant pain (CDFG 1991).

Pain and suffering, as it relates to WS damage management methods, has both a professional and lay point of arbitration. Wildlife managers and the public would be better served to recognize the complexity of defining suffering, since ". . . *neither medical or veterinary curricula explicitly address suffering or its relief*" (AVMA 1987, CDFG 1999).

Therefore, humaneness, in part, appears to be a person's perception of harm or pain inflicted on an animal, and people may perceive the humaneness of an action differently. The challenge in coping with this issue is how to achieve the least amount of animal suffering within the constraints imposed by current technology and funding.

WS has improved the selectivity and humaneness of management techniques through research and development. Research is continuing to bring new findings and products into practical use. Until new findings and products are found practical, a certain amount of animal suffering could occur when some RCGDM methods are used in situations where non-lethal damage management methods are not practical or effective.

Wisconsin WS personnel are experienced and professional in their use of management methods so that they are as humane as possible under the constraints of current technology, workforce and funding. Mitigation measures/standard operation procedures used to maximize humaneness are listed in Chapter 3.

2.3.5 Effects on Non-target Wildlife Species Populations, Including T&E Species

A common concern among members of the public and wildlife professionals, including WS personnel, is the impact of damage management assistance methods and activities on non-target species, particularly T&E species. WS's standard operating procedures include measures intended to mitigate or reduce the effects on non-target and T&E species populations and are presented in Chapter 3. WS has received concurrence from the USFWS and the WDNR with our determination that the proposed action would not affect T&E species (site specific informal consultation would be conducted at some locations) (J. Smith Infor. Section 7 Consul. Letter to J. Maestrelli June 13, 2000, S. Holtz Infor. Consul. Letter to J. Maestrelli June 16, 2000).

2.4 ISSUES CONSIDERED BUT NOT IN DETAIL WITH RATIONALE

2.4.1 Appropriateness of Preparing an EA (Instead of an EIS) For Such a Large Area

Some individuals might question whether preparing an EA for an area as large as the 31 counties in southern and eastern Wisconsin would meet the NEPA requirements for site specificity. Wildlife damage management falls within the category of federal or other agency actions in which the exact timing or location of individual activities cannot usually be predicted well enough ahead of time to accurately describe such locations or times in an EA or EIS. The WS program is analogous to other agencies or entities with damage management missions such as fire and police departments, emergency cleanup organizations, insurance companies, etc. Although WS can predict some of the possible locations or types of situations and sites where some kinds of wildlife damage will occur, the program cannot predict the specific locations or times at which affected resource owners will determine a damage problem has become intolerable to the point that they request assistance from WS. In addition, the WS program would not be able to prevent such damage in all areas where it might occur without resorting to destruction of wild animal populations over broad areas at a much more intensive level than would be desired by most people, including WS and state agencies. Such broad scale population management would also be impractical, if not impossible, to achieve, against WS policies and philosophies..

If a determination is made through this EA that the proposed action would have a significant environmental impact, then an EIS would be prepared. In terms of considering cumulative impacts, one EA analyzing impacts for the southern and/or eastern portions of the state may provide a better analysis than multiple EA's covering smaller

zones.

2.4.2 Impacts of RCGDM Actions on Other Subspecies of Canada Geese

Some people are concerned that WS non-lethal and lethal damage management methods directed at resident Canada geese will impact other subspecies of Canada geese. While four subspecies of Canada geese occur in Wisconsin (Moser et al. 1991), only the giant Canada goose inhabits the state between May 1st and September 15th each year (J. Bergquist, WDNR, April, 2000, pers. comm.). WS lethal management actions will be focused on resident Canada geese and would typically be conducted between May 1st and September 15th when other subspecies are not present in the state. Therefore, WS lethal management actions will be conducted in a manner that minimizes impacts on other subspecies of Canada geese.

In addition, WS abides by laws and regulations of the MBTA regarding the removal and harassment of migratory birds (50 CFR§21). WS minimizes potential impacts on other subspecies of Canada geese with mitigation measures/standard operating procedures listed in Chapter 3. WS non-lethal management actions may be conducted throughout the year. In these cases, other subspecies of Canada geese may temporarily leave the immediate vicinity, but would most likely return after conclusion of the action.

It is possible to manage certain suburban and urban habitats to make the area less attractive to resident geese (e.g., draining a pond, wetland or lake, altering varieties of grass). In these situations, the affects on migrant geese would be similar to the affects on resident geese, in that the birds would merely forage and/or loaf in other nearby locations more attractive to the birds.

2.4.3 Effects on Human Health from Consumption of Canada Geese

To ensure Canada geese that are captured and processed will be safe for human consumption, the WDNR has established a protocol requiring geese from each community/locale to be sampled for contaminants known to be harmful to human health (WDNR 2000). The contaminant analyses would be conducted by certified laboratories. Previously conducted contaminant analysis (UWTF) will be evaluated with recent results of contaminant sampling. The WDNR Wildlife Health Team, in consultation with the Wisconsin Department Health and Family Services (WDHFS), would evaluate whether contaminant levels meet safe human consumption levels and make recommendations if utilization for donation to food pantries is safe. In addition, geese would only be processed by facilities licensed by the state governing authority. The authority selecting the RCGDM program would be responsible for all costs associated with goose tissue sampling and analyses for contaminants.

2.4.4 The Relationship Between Canada Goose Restoration Efforts and Current Resident Canada Goose Conflicts

The relocation of resident Canada geese within Wisconsin has not led to the increase in resident Canada goose conflicts with people in urban areas (J. Bergquist, WDNR, April, 2000, pers. comm.). All relocations, whether in response to nuisance conflicts or population restoration, involved the transfer of urban/suburban geese to rural areas in northern and/or western Wisconsin. Rural sites selected for the release of birds did not offer additional protection, and were most often chosen to expose the birds to higher rates of mortality. The WDNR goose management zones were developed to protect migratory Canada geese, or expose resident Canada geese to additional hunting mortality. The population increase of resident Canada geese in Wisconsin has occurred despite efforts to expose relocated resident geese to higher rates of mortality than are experienced in urban areas.

3.0 ALTERNATIVES

The following alternative courses of action were identified in responses to the public involvement process.

3.1 DESCRIPTION OF ALTERNATIVES

3.1.1 Alternative 1: Integrated Wildlife Damage Management/RCGDM (Proposed Action) Standard operations would include WS direct damage management assistance and technical assistance be applied on a

case-by-case basis. The most appropriate, effective and biologically sound methods would be used to resolve damages caused by resident Canada geese. This approach is known as IWDM and is analyzed and discussed in Chapter 1, 1 - 7 of USDA (1994). In general terms, IWDM is comprised of all the methods available to resolve a particular wildlife problem. These methods include the alteration of cultural practices as well as habitat and behavioral modification to prevent damage. The reduction of wildlife damage may also require that the offending animal(s) be removed or that populations of the offending species be reduced through lethal methods. WS direct damage management methods would be employed only when requested and funded, and when WS determined that non-lethal techniques would be impractical, ineffective, or cost prohibitive. Methods would be implemented at the field level through a decision making process known as the WS Decision Model (Slate et al. 1992 and Appendix C Fig. 8). The magnitude, geographic extent, frequency, and duration of the problem are used to determine if action is warranted. Appendix B in the EA lists the WS wildlife damage management methods that could be used to reduce goose damage. In addition, geese would only be processed in facilities licensed by the state governing authority.

Technical Assistance:

WS would provide technical assistance to the public through verbal or written advice. This may include management recommendations, general information, demonstrations and training. WS distributes literature and materials for others to use in reducing goose problems. Technical assistance is usually provided following a verbal consultation or an on-site visit to determine the nature and history of the problem, extent of damage, and identification of the species responsible for damage.

Explanation of the biology, behavior, and population ecology of the species responsible for damage would occasionally be sufficient to satisfy the resource owner's informational needs and may result in no damage management actions being taken. WS personnel frequently recommend non-lethal techniques in resolving conflicts with resident geese. Recommendations may include, but are not limited to, habitat modification and manipulation, scaring techniques, human behavior modification, physical barriers, and repellents. From 1992 through 1999, WS provided 1,382 technical assistance recommendations for damage management methods and loaned or distributed a variety of tools to implement hazing methods for resident Canada geese. These tools included 4003 flags, 13,027 rounds of pyrotechnics and shellcrackers, 351 propane exploders, 41,403 linear feet of electrical barrier fencing and necessary electrical components, and 300 linear feet of conventional barrier fencing (Wisconsin WS Annual Tables 1992-99). In addition to materials provided by WS, pyrotechnics and other hazing tools were purchased and extensively used by area residents. Herding dogs, alligator effigies, dead goose effigies, electronic devices, swans, chemical repellents, and several other methods have all been used by area residents, corporations, and municipalities to reduce goose damage.

Canada geese are protected under the MBTA. Although hunting is allowed during a regular hunting season with the proper licenses and permits, lethal damage management is not permitted without written authorization from the USFWS. Where threats to human health and public safety or where property damage is involved, WS may recommend to the USFWS that a permit be issued to resource owners for lethal management.

In addition to the routine dissemination of recommendations and information to individuals or organizations, lectures and demonstrations are provided to property owners and other interested groups. WS frequently cooperates with other agencies in education and public information efforts. Additionally, technical papers are presented at professional meetings and conferences so that WS personnel, other wildlife professionals, and the public are periodically updated on recent developments in damage management technology, laws and regulations, and agency policies.

Recipients of technical assistance receive information from WS or the appropriate regulatory agency regarding legal and responsible methods of damage reduction. This includes application procedures as well as biological and environmental affects of these methods. Recipients of WS technical assistance would be responsible for the implementation of recommended management actions. The WS program has no control over the actions, if any,

taken by others.

Direct Damage Management:

Direct damage management would be conducted by WS personnel in the field and typically consists of identification of the source of the problem and implementation of practical lethal and non-lethal management actions. Direct damage management is usually provided when the resource owner's efforts, such as habitat or behavior modification or techniques to frighten geese away, are ineffective and technical assistance alone is inadequate. Direct damage management provided by WS in Wisconsin is provided on a cost-reimbursable basis. This funding is provided by the resource owners, private businesses, or local, state or other federal agencies. WS personnel consider practical and effective methods for resolving damage problems and take action by implementing the most appropriate measures.

It is anticipated that WS would not remove and/or relocate more than 3000 geese in a given year. This represents only 3% of the current resident Canada goose spring population in Wisconsin.

Research and Development:

The National Wildlife Research Center (NWRC) functions as the research arm of WS by providing scientific information for the development of biologically sound methods for wildlife damage management. It is active in the research and development of techniques to prevent or resolve damage caused by geese and other waterfowl. NWRC scientists work closely with wildlife managers, researchers, field specialists and others to develop and evaluate wildlife damage management techniques. NWRC research was instrumental in the development of methyl anthranilate, the chemical repellent which is now marketed under the names of ReJeX-iT and Bird Shield. In addition, NWRC is currently testing new experimental drugs that inhibit bird reproduction. NWRC scientists have authored hundreds of scientific publications and reports, and are respected world-wide for their expertise in wildlife damage management.

3.1.2 Alternative 2: Technical Assistance RCGDM Only by WS (No Action)

This No Action Alternative relates to the portion of the Current Program that responds to requests for assistance in dealing with resident Canada goose conflicts by providing technical assistance only. Technical assistance for lethal and non-lethal methods as described in 3.1.1 would continue to be provided.

WS frequently assists the USFWS in assessing goose conflicts by providing site specific recommendations regarding the extent of the problem, potential solution, whether a permit should be issued, and if so how many birds should be removed. Permits could be requested to allow the property owners or resource managers to implement lethal methods themselves or contract others to do so. Permits would be issued by and at the discretion of USFWS. Permits issued for lethal management would also need to be approved by the WDNR. Lethal methods that may be implemented by persons or groups other than the WS program would be limited to those methods authorized by the permitting agencies.

3.1.3 Alternative 3: Non-lethal and Technical Assistance RCGDM Only by WS

If lethal direct control were used in other situations, it would be employed by persons or programs other than WS. Both non-lethal direct damage management and technical assistance as described in 3.1.1 would continue to be provided by WS. Alternative 3 has sometimes been referred to as the USFWS "Alternative G" (see 3.2.2). Alternative 3 is similar to "Alternative G" with respect to WS's implementation of field activities. However, WS's decision making model is not similar to that of "Alternative G".

Assistance for USFWS permits described in 3.1.2 would continue to be provided by WS.

3.1.4 Alternative 4: No Federal WS RCGDM

Alternative 4 would consist of no direct damage management or technical assistance offered or employed by WS.

Under this alternative, requests for assistance in dealing with goose damage conflicts would be handled by private resource owners and managers, private contractors, and/or other government agencies. This alternative is discussed in detail in USDA (1994).

3.2 ALTERNATIVES ELIMINATED FROM FURTHER DISCUSSION WITH RATIONALE

3.2.1 Non-lethal Methods Implemented Before Lethal Methods

This alternative is similar to Alternative 1 except that WS personnel would be required to always recommend or use non-lethal methods prior to recommending or using lethal methods to reduce goose damage. Both technical assistance and direct damage management would be provided in the context of a modified IWDM approach.

Alternative 1, the Proposed Action, recognizes non-lethal methods as an important dimension of IWDM, gives them first consideration in the formulation of each management strategy, and recommends or uses them when practical before recommending or using lethal methods. However, the important distinction between the Non-lethal Methods First Alternative and the Proposed Alternative is that the former alternative would require that all non-lethal methods used before any lethal methods are recommended or used.

While the humaneness of the non-lethal management methods under this alternative would be comparable to the Proposed Program Alternative 1, the extra harassment caused by the required use of methods that may be ineffective could be considered less humane. As the local goose population increases, the number of areas negatively affected by geese would increase, and greater number of geese would be expected to congregate at sites where non-lethal management efforts were not effective. This may ultimately result in a greater numbers of geese being killed to achieve the local WAC than if lethal management were immediately implemented at problem locations (Manuwal 1989, J. Cooper, Univ. of Minnesota, March, 2000, pers. comm.). Once lethal measures were implemented, goose damage would be expected to drop relative to the reduction in localized population of geese causing damage.

After a period of several years, the effectiveness of this alternative may surpass that of the Current Program (Alternative 2), because of the increased option for lethal management. Since in many situations this alternative would result in greater numbers of geese being killed to achieve the local WAC, at a greater cost to the requester, and result in a delay in reaching the local WAC in comparison to the Proposed Alternative, the Non-lethal Methods Implemented Before Lethal Methods Alternative is removed from further discussion in this document.

3.2.2 Alternative G, Humane Non-lethal Control with Wildlife Management Policy Review

This alternative was proposed by the Coalition to Protect Canada Geese (CPCG).

“Under this alternative, conflicts involving Canada geese will be resolved using established, site-specific, humane, non-lethal control methods including harassment (border collies, etc.), turf grass repellents (Re-Jex-It, FlightControl, etc.), barriers, habitat modification, clean-up programs, and so forth. These community based programs would be promoted and coordinated by the USFWS with direct involvement of humane organizations. The alternative rejects numerical “population control” (killing, culling, etc.) as being both inhumane and having no significant practical value — or basis in sound biology — for achieving site-specific relief.”

“Under this alternative, the USFWS would take a proactive stand against the dissemination of exaggeration and misinformation about geese damaging property and being a threat to health and human safety. The USFWS would be responsible for establishing an independent panel (consisting of medical professionals, nominated by stakeholders, including animal protection organizations) to investigate all health and human safety claims made against geese for which actions were being recommended.”

“This alternative would freeze the issuance and renewal of lethal depredation permits until such time as scientific studies have been conducted (using a protocol subject to public review) to determine the impact of state and federal hunting-oriented wildlife management activities (e.g., “restoration” projects, baiting programs, etc.) on

suburban/urban goose conflicts.”

WS is the lead agency for the preparation and decisions made through this EA, not the USFWS and WS cannot, through NEPA, require the USFWS to implement any of the conditions of the proposed CPCG alternative, “Alternative G.” However, many of the components of the CPCG alternative have, for the most part, been analyzed in detail in the alternatives contained in this EA and through court rulings. The CPCG alternative would not allow for a full range of IWDM techniques to resolve goose damage management problems and only non-lethal methods would be used. WS is charged by law and directed by Congress to protect American agricultural and natural resources, property, and human health and safety, despite the cost of the action. Further, in the Southern Utah Wilderness Alliance et al. v. Hugh Thompson et al. U.S. Forest Service (United States District Court 1993) the court clearly stated that, *“The agency need not show that a certain level of damage is occurring before it implements an ADC program . . . Hence, to establish need for an ADC, the . . . supervisors need only show that damage . . . is threatened.”* In other words, it is not necessary to establish threshold of loss criterion, use only non-lethal methods, establish independent panels before implementing an action, or restriction management strategies, etc. to justify or establish a damage management program. The alternatives selected for detailed analysis in this EA include many of the suggestions in the CPCG proposal, and it is believed that inclusion of this alternative would not contribute new information or options for consideration by decision makers and analysis not already considered in the EA.

Non-lethal methods cannot universally be applied to all goose damage management situations successfully. While non-lethal methods may reduce damage in some situations, the cost of implementing some non-lethal methods would be cost prohibitive for many entities suffering losses. Because WS would not be able to respond effectively to all goose damage management requests and would be more restrictive, it is likely that losses would increase from the current level. In addition, WS would establish a “community-based” program whereby the wishes of the community at large would be complied with. WS also has established a 1-800 hotline to answer questions and provide information to entities experiencing wildlife damage problems. Costs to administer the CPCG alternative would be expected to greatly increase and losses would also increase. It is judged that the CPCG “Alternative G” would not provide a benefit to the people of Wisconsin and no economic benefit would be realized to those suffering losses or to wildlife management agencies.

3.3 RCGDM STRATEGIES AND METHODOLOGIES AVAILABLE TO WS IN WISCONSIN

The strategies and methodologies described below include those that could be used or recommended under Alternatives 1, 2, and 3 described above. Alternative 4 would terminate both WS technical assistance and direct RCGDM assistance by WS. Appendix B provides a more thorough description of the methods that could be used or recommended. The most effective approach to reducing wildlife damage is to integrate the use of several methods simultaneously or sequentially. The philosophy behind IWDM is to implement the best combination of effective management methods in a cost effective manner while minimizing the potentially harmful effects on humans, target species, non-target species, and the environment. IWDM may incorporate cultural practices (e.g., animal husbandry), habitat modification (e.g., exclusion), animal behavior modification (e.g., scaring), removal of individual offending animals, local population reduction, or any combination of these, depending on the circumstances of the specific damage problem.

3.3.1 Alternative 1: Integrated Wildlife Damage Management/RCGDM (Proposed Action)

3.3.1.1 IWDM Strategies that WS may Employ Under the Proposed RCGDM Program

Under APHIS NEPA Implementing Regulations and specific guidance for the WS program, WS technical assistance is categorically excluded from the need to prepare an EA or EIS. However, technical assistance is discussed in this EA because it is an important component of the IWDM approach to resolving damage problems.

3.3.1.1.1 Technical Assistance Recommendations

Technical assistance as used herein is information, demonstrations, and advice on available and appropriate wildlife damage management methods. The implementation of methods to reduce damage is the responsibility of the

requester. In some cases, WS provides supplies or materials that are of limited availability for non WS entities to use. Technical assistance may be provided following a personal or telephone consultation, or during an onsite visit with the requester. Generally, several management strategies are described to the requester for short and long-term solutions to damage problems; these strategies are based on the level of risk, need, and the practicality of their application.

3.3.1.1.2 Direct Damage Management

This is the conducting or supervising of damage management activities by WS personnel. Direct damage management may be initiated when the problem cannot effectively be resolved through technical assistance alone, and when *Agreements for Control* or other comparable instruments provide for WS direct damage management. The initial investigation defines the nature, history, extent of the problem, species responsible for the damage, and methods that would be available to resolve the problem. Professional skills of WS personnel are often required to effectively resolve problems, especially if restricted use chemicals are necessary, or if the problem is complex.

3.3.1.1.3 Examples of WS Direct Damage Management Assistance and Technical Assistance in RCGDM in Wisconsin

An example of WS technical RCGDM assistance in Wisconsin includes providing free, technical IWDM information (including leaflets) to requesters from our toll-free 1-800 telephone line. WS employees would also conduct presentations and field demonstrations about how to properly implement IWDM methods (e.g., propane exploders, pyrotechnics, chemical repellents, egg destruction).

Examples of WS direct RCGDM assistance in Wisconsin include harassment programs, construction of barrier fencing, construction of wire grids, egg destruction, capture and euthanasia of geese to sample for contaminants known to be harmful to human health, capture of juvenile geese for collection of biological health samples prior to relocation, capture and relocating juvenile geese, and capture and transporting geese to a state licensed poultry processing facility for processing for human consumption.

Geese are captured using the most appropriate and humane method(s). Most captures take place during the molt, allowing groups of birds to be captured efficiently and humanely. During molt, waterfowl are unable to fly due to the loss (molting) and replacement of their primary and secondary flight feathers. The molting season for resident Canada geese generally occurs in June and July. Captures made at this time of year are specific to resident geese, as defined. Migratory populations of Canada geese have left the area for traditional nesting and breeding areas, primarily in Canada. An immobilization chemical, alpha chloralose (AC), is frequently the method used to capture geese outside the molt period. AC is regulated by the FDA. WS is authorized to use AC under INAD 6602, and WS personnel are trained and certified in its use. AC can not be used 30 days in advance of or during hunting season. Captured geese would be typically euthanized in accordance with guidelines established by the AVMA. In some settings where problem geese cannot be captured or otherwise controlled, or to reinforce harassment techniques, a small number may be selectively removed with pellet rifle or shotgun. Geese suitable for human consumption would be donated to qualified charitable organizations whenever feasible. Geese found to be unsuitable for human consumption and geese taken under circumstances where donations are not feasible would be disposed of as directed in the permit issued by the USFWS (e.g., buried or incinerated).

It is anticipated that WS would not remove and/or relocate more than 3000 geese in a given year. This represents only 3% of the current resident Canada goose spring population in Wisconsin.

3.3.1.2 WS Decision Making

WS personnel use a thought process for evaluating and responding to damage complaints that is depicted by the WS Decision Model described by Slate et al. (1992) (Appendix C Fig. 8). WS personnel are frequently contacted after requesters have tried or considered non-lethal methods and found them to be impractical, too costly, or inadequate for reducing damage to an acceptable level. WS personnel assess the problem, evaluate the appropriateness and

availability (legal and administrative) of strategies and methods based on biological, economic and social considerations. Following this evaluation, the methods deemed to be practical for the situation are developed into a management strategy. After the management strategy has been implemented, monitoring is conducted and evaluation continues to assess the effectiveness of the strategy. If the strategy is effective, the need for further management is ended. In terms of the WS Decision Model (Slate et al. 1992), most damage management efforts consist of continuous feedback between receiving the request and monitoring the results of the damage management strategy. The Decision Model is not a documented process, but a mental problem solving process common to most if not all professions.

3.3.1.3 RCGDM Methods Available for Use

3.3.1.3.1 Non-lethal Methods

Non-lethal methods of reducing goose damage may include resource management, wildlife management, and methods of physical exclusion as described in Appendix B.

Harassment causing geese to move from an area can sometimes result in the geese causing similar problems (e.g. an accumulation of fecal droppings) at the new location (Smith et al. 1999). These newly created problems may negatively impact aesthetics at the new location. However, when the WS program employs methods to disperse geese from a given location, a reasonable attempt is made to monitor the birds' movements to assure the birds do not cause conflicts in other locations.

3.3.1.3.2 Lethal Methods

Lethal methods of reducing goose damage may include several methods of population reduction as described in Appendix B in this EA.

3.3.2 Alternative 2: Technical Assistance RCGDM Only by WS (No Action)

This alternative would not allow WS direct RCGDM assistance in the state. WS would only provide technical assistance and make recommendations when requested. Producers, state agency personnel, or others could conduct RCGDM non-lethal and/or lethal methods that are available and they deem effective.

3.3.3 Alternative 3: Non-lethal and Technical Assistance RCGDM Only by WS

This alternative would allow WS to only provide non-lethal direct damage management and/or technical assistance and make recommendations when requested. Producers, state agency personnel, or others could conduct RCGDM non-lethal and/or lethal methods that are available and they deem effective.

3.3.4 Alternative 4: No Federal WS RCGDM

This alternative would consist of no federal involvement in RCGDM in Wisconsin, neither direct damage management nor technical assistance to provide information about non-lethal and/or lethal management techniques. Agricultural producers, state agency personnel, or others would be left with the option to conduct RCGDM lethal or non-lethal methods that are available and they deem effective.

3.4 MITIGATION AND STANDARD OPERATING PROCEDURES FOR RCGDM TECHNIQUES

3.4.1 Mitigation in Standard Operating Procedures

Mitigation measures are any features of an action that serve to prevent, reduce, or compensate for impacts that otherwise might result from that action. The current WS program, nationwide and in Wisconsin, uses many such mitigation measures and these are discussed in detail in Chapter 5 of USDA (1994). Some key mitigating measures pertinent to the proposed action and alternatives that are incorporated into WS's standard operating procedures include:

- . The WS Decision Model would be used to identify effective wildlife damage management strategies and their impacts (Slate et al. 1992).
- . Reasonable and prudent measures or alternatives would be identified through consultation with

the USFWS and are implemented to avoid impacts to T&E species.

Some additional mitigating factors specific to the proposed program include:

- . Management actions would be directed toward localized populations or groups of target species and/or individual offending members of those species.
- . WS uses RCGDM devices and conducts activities for which the risk of hazards to public safety and hazard to the environment have been determined to be low according to a formal risk assessment (USDA 1994, Appendix P). Where such activities are conducted on private lands or other lands of restricted public access, the risk of hazard to the public is even further reduced.

3.4.2 Additional Mitigation Specific to the Issues

The following is a summary of additional mitigation measures that are specific to the issues listed in Chapter 2 of this document.

3.4.2.1 Effects on Target Species Populations

1. RCGDM is directed to resolve goose damage problems by taking action against individual problem birds, or local populations or groups, not by attempting to eradicate or reduce populations in the entire area or region.
2. To ensure that methods of live-capturing geese result in no pain or a minimum of pain, which could be measured as physical injury (e.g., bleeding, broken wing), captured birds would be made as comfortable as possible by watering the birds as necessary, not overcrowding the birds if they are put in holding cages for transportation, and seeking shade for caged birds as necessary.
3. WS take is monitored by comparing numbers of birds killed with overall populations or trends in populations to assure the magnitude of take is maintained below the population goal identified in the Giant Canada Goose Management Plan for Wisconsin (WDNR 1994). In addition, the federal and state permitting processes under which management actions would be implemented will ensure that the statewide population would not be reduced below the population goal identified in the Giant Canada Goose Management Plan for Wisconsin (WDNR 1994) (See Chapter 4). It is anticipated that WS would not remove and/or relocate more than 3000 geese in a given year. This represents only 3% of the current resident Canada goose spring population in Wisconsin.

3.4.2.2 Effects on Non-target Species Populations Including T&E Species

1. WS personnel are trained and experienced to select the most appropriate method for taking problem animals and excluding non-target wildlife.
2. Observations of birds are made to determine if non-target or T&E species would be at significant risk from RCGDM activities.
2. WS would contact the USFWS and WDNR when direct management is not conducted in urban/suburban locations to obtain information on the possible presence of T&E species through the WDNR's Natural Heritage Inventory Database.
3. WS would consult with the WDNR in situations that the WDNR is not providing oversight.
4. WS construction of electric fencing will be of design to restrict goose movement, however electrified wires would be high enough so as not to impede reptile movement.
5. WS has consulted with the USFWS regarding potential impacts of damage management methods on T&E species, and abides by reasonable and prudent alternatives (RPAs) and/or reasonable and prudent measures (RPMs) established as a result of that consultation. For the full context of the Biological Opinion see Appendix F of USDA (1994). Further consultation on species not covered by or included in that formal

consultation process have been initiated with the USFWS and WS will abide by any RPAs, RPMs, and terms and conditions that result from that process to avoid jeopardizing any listed species.

6. While four subspecies of Canada geese are abundant in Wisconsin (Moser et al. 1991), only the giant Canada goose inhabits the state between May 1st and September 15th each year (J. Bergquist, WDNR, April, 2000, pers. comm.). WS lethal management actions would be focused on resident Canada geese and would typically be conducted between May 1st and September 15th when other subspecies are not present in the state. Therefore, WS lethal management actions would be conducted in a manner that minimizes potential effects other subspecies of Canada geese.

4.0 CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

Chapter 4 provides information needed for making informed decisions in selecting the appropriate alternative for meeting the purpose of the proposed action. The chapter analyzes the environmental consequences of each alternative in relation to the issues identified in Chapter 2 for detailed analysis. This section analyzes the environmental consequences of each alternative in comparison with the Proposed Action Alternative to determine if the real or potential impacts would be greater, lesser, or the same. Therefore, the Proposed Action Alternative serves as the baseline for the analysis and the comparison of expected impacts among the alternatives.

The following resource values within Wisconsin, are not expected to be adversely impacted by any of the alternatives analyzed: soils, geology, minerals, flood plains, air, and timber. These resources will not be analyzed further.

4.1 ENVIRONMENTAL CONSEQUENCES FOR ISSUES ANALYZED IN DETAIL

4.1.1 Effects on Target Species Populations

4.1.1.1 Alternative 1: Integrated Wildlife Damage Management/RCGDM Program (Proposed Action)

A common concern among members of the public is whether wildlife damage management actions adversely affect the viability of target species populations. The target species selected for analysis in this EA are resident Canada geese. It is anticipated that not more than 3000 geese would be removed and/or relocated in a given year as a result of WS damage management methods under the proposed action. This represents about 3% of the current resident Canada goose spring population in Wisconsin. While local populations of resident Canada geese deemed above the WAC by the local governing body may be reduced, the USFWS and WDNR permitting processes under which management actions would be implemented would ensure that the statewide or region-wide population would not be reduced below the goal of 68,000 resident Canada geese in Wisconsin (WDNR 1994, Mississippi Flyway Technical Section 1996).

4.1.1.2 Alternative 2: Technical Assistance RCGDM Only by WS (No Action)

Under this alternative, WS would have no impact on target species populations in Wisconsin because the WS program would not conduct any direct RCGDM and would be limited to providing advice only. WS would provide technical assistance to private individuals or entities and could recommend the issuance of a USFWS permit for lethal reduction of resident Canada geese.

Private efforts to reduce or prevent goose conflicts through lethal means would likely increase. Resource owners may even take drastic unconventional action against some local populations of Canada geese out of frustration of continued damage. For example, in July 1998, 18 resident Canada geese were illegally killed by a vehicle in the city of Horicon, Wisconsin, likely as a result of frustration over conflicts with the birds (J. Christian, WDNR, April, 2000, pers. cons.). Impacts and hypothetical risks of the illegal killing of geese under this alternative may be greater than the proposed action, about the same as Alternative 3, but less than Alternative 4.

Resident Canada geese would likely continue to increase in abundance over time where hunting pressure was low to

non-existent. Some local populations of resident Canada geese may decline where hunting pressure was adequate. The overall impact on the target species population would likely be similar to 4.1.1.1 because USFWS and WDNR permitting processes would ensure that the statewide or region-wide population would not be reduced below the goals of the Giant Canada Goose Management Plan for Wisconsin.

4.1.1.3 Alternative 3: Non-Lethal and Technical Assistance RCGDM Only By WS

Under this alternative, WS would provide technical assistance for RCGDM as described in 4.1.1.2 and non-lethal direct damage management. WS would not intentionally kill any Canada geese because no lethal methods would be used. Although WS take of Canada geese would not occur, it is likely that, without WS conducting some level of lethal RCGDM activities, private RCGDM efforts would increase. For similar reasons as shown in the population impacts analysis in section 4.1.1.1, it is unlikely that Canada geese populations would be adversely impacted by implementation of this alternative. Impacts and hypothetical risks of the illegal killing of geese under this alternative would probably be greater than the proposed action, about the same as Alternative 2, but less than Alternative 4.

4.1.1.4 Alternative 4: No Federal WS RCGDM

Under this alternative, WS would have no impact on Canada geese populations in the state. Private individuals or entities would still have to obtain permits from the USFWS for lethal reduction of Canada geese. Efforts of private individuals or entities to reduce or prevent conflicts with geese could increase, which could result in unpredictable effects on resident Canada goose populations. Impacts on target species under this alternative could be the same, less, or more than those of the proposed action depending on the comprehensiveness of damage management information provided to complainants by other sources and the tolerance for Canada geese by those receiving damage. For the same reasons shown in the population impacts analysis in section 4.1.1.1, it is unlikely that Canada geese populations would be adversely impacted by implementation of this alternative. It is hypothetically possible that frustration caused by the inability to reduce goose conflicts could lead to illegal killing of geese.

4.1.2 Effectiveness of RCGDM

4.1.2.1 Alternative 1: Integrated Wildlife Damage Management/RCGDM Program (Proposed Action)

This alternative would be more effective than the current program or any of the other alternatives in reducing or minimizing damage caused by geese. Population limiting techniques (e.g., hunting, relocation, capture and process for human consumption, and egg destruction) have long-term effects and, based on research in the Minneapolis-St. Paul Metropolitan Region, can slow population growth or even reduce the size of a goose population (Cooper and Keefe 1997). This alternative incorporates all aspects of the current program, but allows for greater flexibility to use all legally available methods to reduce goose problems. In the opinion of professional wildlife managers, non-lethal methods would not resolve the damage. Most people respect wildlife professionals' judgement in specific management situations (Reiter et al. 1999).

This alternative would give WS the option to implement lethal management in response to human health and safety concerns and damage to property and other resources. This alternative would enhance WS's effectiveness and ability to address a broader range of damage problems. Repopulation of sites where lethal management methods were used would undoubtedly take place as long as suitable habitat existed in that area. However, the use of lethal management would reduce the number of damaging geese thereby enhancing the effectiveness of non-lethal methods (Smith et al. 1999). An integrated approach (including relocation, and trap and processing for human consumption) to address conflicts with resident Canada geese in the Twin Cities Metropolitan Area has resulted in a decrease in the number of complaints about goose damage (J. Cooper, March, 2000, pers. comm.). Kilpatrick and Walter (1999) also reported that when an urban wildlife population above the WAC is reduced through lethal means, many resident subsequently experience reduced damage. In addition, this approach has not just stabilized the population of resident geese, but it has caused the population to decline to a level closer to the WAC (J. Cooper, March, 2000, pers. comm.). This alternative would also be more effective than Alternatives 2 or 3, which rely primarily on frightening or displacing geese from one damaging situation to another.

This alternative would likely reduce the potential for birds-aircraft collisions at airports and increase human safety. This has been demonstrated by Cooper (1991) who reported the removal of geese posing or likely to pose a hazard to air safety at airports significantly reduced the population of local geese, decreased the number of goose flights through airport operations airspace, and significantly reduced goose-aircraft collisions at Minneapolis-St. Paul International Airport. In addition, Dolbeer et al. (1993) demonstrated that an integrated approach (including removal of offending birds) reduced bird hazards at ██████████ Airport and substantially reduced bird collisions with aircraft by as much as 89%. Jensen (1996) also reported that an IWDM approach that incorporated removal of geese at ██████████ Airport reduced goose-aircraft collisions by 80% over a 2 year period.

4.1.2.2 Alternative 2: Technical Assistance RCGDM Only by WS (No Action)

Methods of frightening or discouraging geese have been effective at specific sites. In most instances however, these methods have simply shifted the problem elsewhere (Conover 1984, Aguilera et al. (1991), and Swift 1998). Habitat modifications, while potentially effective, are poorly accepted, not widely employed, and many include reducing water levels in wetlands and are not biologically sound. Population reduction would be limited to opportunities for legal hunting and depredation permits. As illustrated in Appendix C Figure 3, current causes of goose mortality are not expected to reduce the overabundance of resident geese, and therefore, under this alternative the number of conflicts with geese can reasonably be expected to increase.

As illustrated by the gradually increasing nature of requests received by WS since 1992, while providing technical assistance only, it is unlikely that conflicts would be reduced and unlikely that requests would be able to reduce damage if Alternative 2 is implemented. Of the non-lethal techniques commonly used by the public to reduce conflicts with geese (e.g., feeding ban, habitat modification, live swan, methyl anthranilate, fencing, harassment with dogs, people or vehicles), only fencing was reported to have been highly effective (Cooper 1997). Farmers throughout southern Wisconsin, enrolled in Wisconsin's WDACP, have implemented non-lethal management methods in an attempt to reduce resident goose damage to agricultural crops with little success.

Individuals experiencing conflicts with resident geese would still be eligible to receive permits from the USFWS for lethal management. However, individuals or entities that implement lethal management may not have the experience necessary to efficiently and effectively conduct the actions and increase adverse risks to humans, pets and other wildlife.

The current program has failed to adequately protect human health, protect human safety, protect property, or reduce economic losses. Long-term solutions usually require some form of local population reduction to stabilize or reduce goose numbers (Smith et al. 1999).

4.1.2.3 Alternative 3: Non-Lethal and Technical Assistance RCGDM Only By WS

Non-lethal direct management methods implemented by WS would be identical to those recommended under Alternative 2, but may have slightly improved success because they would be maintained and applied in a more persistent manor by the WS program. This alternative is similar to 4.1.2.2, except WS could use non-lethal methods during direct management and this would likely reduce the potential for displaced geese to cause adverse impacts at other sites as WS would monitor goose movements.

4.1.2.4 Alternative 4: No Federal WS RCGDM

Taking no action could reasonably be expected to be the least effective of all of the alternatives examined in this EA because requesters may not get adequate information to reduce damage. Therefore, management actions by those experiencing conflicts may not be comprehensive and would likely be less effective in resolving damage.

4.1.3 Effects on Aesthetic Values

4.1.3.1 Alternative 1: Integrated Wildlife Damage Management/RCGDM Program (Proposed Action)

Affected resource owners would likely favor this alternative over all other alternatives because it provides the most options to reduce damage and the ability to choose among the most methods to design effective solutions specific to their social and economic needs and WAC values. This alternative would likely be recognized for the most potential for long-term positive impact. The impact to stakeholder(s) not receiving damage would be highly variable and dependent on their values towards wildlife and compassion for people. Some stakeholders may see the need to have local communities reduce damage caused by Canada geese, while other stakeholders may strongly oppose damage reduction efforts and oppose local communities having the option to choose the most effective management strategies. A minority of opposing stakeholders could also oppose all damage reduction methods involving physical exclusion and wildlife management (Appendix B). A small minority of stakeholders could oppose the need for lethal management of migratory birds for any reason. If population reduction occurred, the public could continue to observe geese, however in lower abundance in some locations. Affected individual's aesthetic value of geese would likely increase as more local populations of geese fall within the WAC people desire.

The public's ability to view and aesthetically enjoy resident Canada geese at a particular pond or water body would likely be limited if the geese were removed. However, the community, private, or public property authority selecting the RCGDM actions would have established a population level that are socially acceptable for their situation, and the population would not be brought below this level. Immigration of resident geese from other areas could possibly replace some of the birds removed or relocated during a damage management action. It is also expected that geese, which were fledged in/near areas experiencing conflicts, that molted at other locations during removal may return to breed at the sites. There will also be opportunity to view or feed other geese if an individual makes the effort to visit other parks or areas with adequate habitat for geese.

Harassment activities causing geese to move from an area can sometimes result in the geese causing similar problems (e.g., an accumulation of fecal droppings) at the new location. These newly created problems may negatively impact aesthetics at the new location. However, when the WS program employs methods to disperse geese from a given location, a reasonable attempt would be made to monitor the birds' movements to ensure they do not cause conflicts in other locations.

Canada geese, like other birds, defecate at rates related to the amount of forage they consume. Therefore, if geese would be displaced from a location by harassment efforts, relocation, or capture and processing for human consumption, the site should experience a reduction in the accumulation of fecal droppings in proportion to the reduction of goose numbers on site. Stakeholders previously adversely affected by an overabundance of goose fecal droppings would likely view this reduction as aesthetically pleasing.

Waterfowl hunters could oppose this alternative since it could take more effort to legally harvest geese. Some waterfowl hunters could believe hunting opportunities near an urban/suburban area or park would decrease because resident Canada geese were captured and relocated or processed for human consumption. However, waterfowl hunters could benefit by harassment activities in urban/suburban areas that cause Canada geese to temporarily move and expose them to harvest.

4.1.3.2 Alternative 2: Technical Assistance RCGDM Only by WS (No Action)

Under Alternative 2, WS would only provide technical assistance, which is frequently ineffective, cost prohibitive, or moves the geese onto other resource owner's property. The uninformed and unaffected public would likely favor this alternative and they would continue to observe geese in abundance. The aesthetic value of geese would diminish as more people are adversely affected at work, home, and recreational areas. As geese become more numerous and commonplace, their aesthetic value will decline or be taken for granted. Once the public is informed, they are likely to reject this alternative because of the ineffectiveness of methods or the fact that harassment and exclusion simply move geese onto other People's property.

Since harassment activities cause geese to move from an area can sometimes result in the geese causing similar

problems (e.g., an accumulation of fecal droppings) at other locations within their home range, these problems at other locations may negatively impact aesthetics at the other location (Woodruff and Green1995). If WS does not provide direct management in implementing non-lethal harassment techniques, coordination with local authorities to monitor the birds' movements to assure they do not reestablish in other undesirable locations might not be conducted. Thus, this alternative would most likely result in more property owners experiencing adverse effects to their properties and self than the proposed alternative.

The impacts of this alternative to stakeholders not receiving damage might be variable depending on their values toward wildlife and compassion for their neighbors. Some individuals or groups might prefer this alternative because they believe it would be morally wrong to kill or use animals for any reason and believe migratory birds should be protected by the MBTA from being killed under all circumstances. Also, some people may have formed bonds with particular Canada geese at particular locations and these people may be opposed to any lethal or relocation management. However, under this alternative lethal management would not be prohibited as individuals experiencing conflicts with geese could still receive permits from the USFWS allowing lethal control. There would likely be increasing numbers of geese under this alternative, thus providing increased goose viewing opportunities.

Goose hunters may benefit from increased numbers of geese because less effort would be needed to fill the legally allowed daily bag. Goose hunters may also benefit from increased numbers of geese forced to find alternative feeding and resting sites because of harassment at damage sites.

4.1.3.3 Alternative 3: Non-Lethal and Technical Assistance RCGDM Only by WS

This alternative is similar to 4.1.3.2, except WS could use non-lethal methods during direct management and this would likely reduce the potential for displaced geese to cause adverse impacts at other sites as WS would monitor goose movements.

4.1.3.4 Alternative 4: No Federal WS RCGDM

Under this alternative WS would not provide assistance in RCGDM. Goose harassment activities conducted by entities other than WS may cause geese to move from an area and result in the geese causing similar problems (e.g., an accumulation of fecal droppings) at other locations within their home range, as was observed by Smith (1998). Therefore, this alternative would most likely result in more property owners experiencing adverse effects on properties than the proposed program alternative. The RCGDM programs employed by people experiencing conflicts with geese would not be as complete or effective as possible, depending upon the comprehensiveness the damage management information received from other sources. This would likely result in impacts upon aesthetic values being similar to 4.1.3.2.

4.1.4 Humaneness of Lethal RCGDM Methods Used by WS

4.1.4.1 Alternative 1: Integrated Wildlife Damage Management/RCGDM Program (Proposed Action)

Under this alternative, methods viewed by some persons as inhumane would be used in RCGDM by WS. These methods would include capture and relocation, capture and euthanasia to test for contaminants known to be harmful to human health, capture and processing for human consumption, immobilization with the use of AC, and shooting.

Many stakeholders would want geese captured in a way that results in no pain or a minimum of pain, which they could measure as physical injury (e.g., bleeding, broken wing). Captured birds would be made as comfortable as possible by watering the birds as necessary, not overcrowding the birds if they are put in holding cages for transportation, and seeking shade for caged birds as necessary.

There would likely be concern among stakeholders, in situations where geese are captured and processed for human consumption, that the birds should be killed quickly by the poultry processing facility. Geese would be processed for human consumption in state licensed poultry processing facilities in accordance with all pertinent regulations.

There may be concern among stakeholders that birds sedated with AC should not be allowed to drown, even if the birds are to be euthanized. If geese are shot, stakeholders would likely want quick clean kills of shot birds. Some persons would view shooting as inhumane. In situations where geese are being captured alive by use of nets or by hand to test for contaminants known to be harmful to humans, the birds would be euthanized by methods approved by the AVMA (Andrews et al. 1993) (e.g., CO₂ gas). Most people would view AVMA-approved methods of euthanizing animals as humane.

Some people could also be concerned about eggs being oiled, punctured, frozen, or otherwise addled. A minority of stakeholders would likely want no geese captured, harassed, or killed because they consider putting birds in holding cages as inhumane, and most killing of birds as inhumane regardless of the method used to kill the geese. The only method of killing a minority of stakeholders would approve is chemical euthanasia of injured animals, unfortunately these animals are most often considered unfit for human consumption.

If there are people who have developed affectionate bonds with individual geese, and if those particular geese would be removed, those individuals may feel sadness and perhaps anger.

Some people have concern over the potential for separation of goose families through management actions. This could occur through harassment (e.g., pyrotechnics, dogs), relocation, and/or processing of geese for human consumption. However, it is not uncommon for goose family units to experience change. Bellrose (1976) cites several sources which list annual mortality rates of juvenile Canada geese ranging from 7 to 19% during the hatching to fledging stage. Biologists believe that juvenile geese have a good likelihood of survival without adult geese once the juvenile reaches fledging stage, which occurs by July for most juvenile geese. Therefore, molting juvenile geese that escape capture would most likely survive to adult-hood (Mississippi Flyway Council Technical Section 1996). Separated adults form new pair bonds and readily breed with new mates at the appropriate time of year (Moser 1991).

4.1.4.2 Alternative 2: Technical Assistance RCGDM Only by WS (No Action)

Under this alternative, lethal methods viewed as inhumane by some persons would not be used by WS. It is expected that many requesters of RCGDM assistance would reject implementing only non-lethal methods of damage abatement and/or would not be willing to pay the extra cost of implementing and maintaining non-lethal methods. Therefore, other agencies, businesses, organizations, or people would likely eventually seek alternative lethal methods that would result in impacts to humaneness similar to the proposed action. The concerns of stakeholders may be similar to those in 4.1.4.1.

4.1.4.3 Alternative 3: Non-Lethal and Technical Assistance RCGDM Only by WS

While WS would only provide technical assistance and non-lethal forms of direct management assistance under this alternative, other agencies, businesses, organizations, or people may be able to relocate and/or capture and kill Canada geese. Therefore, lethal management actions by entities other than WS would likely result in impacts to humaneness similar to the proposed action. Concerns among stakeholders would likely be similar to 4.1.4.2 and 4.1.4.2.

4.1.4.4 Alternative 4: No Federal WS RCGDM

WS would be providing no assistance in RCGDM. This alternative would most likely result in impacts to humaneness similar to the proposed action.

4.1.5 Effects on Non-target Wildlife Species Populations, Including T&E Species

4.1.5.1 Alternative 1: Integrated Wildlife Damage Management/RCGDM Program (Proposed Action)

A common concern among members of the public and wildlife professionals, including WS personnel, is the impact of damage management methods and activities on non-target species, particularly T&E species. WS's standard operating procedures include measures intended to mitigate or reduce the effects on non-target species populations

and are presented in Chapter 3.

WS lethal management actions would be focused on resident Canada geese and typically conducted between May 1st and September 15th when other subspecies of Canada geese are not present in the state. In addition, all capture and removal methods allow for positive identification of the target species.

Special efforts are made to avoid jeopardizing T&E species through biological evaluations of the potential effects and the establishment of special restrictions or mitigation measures. WS has consulted with the USFWS under Section 7 of the ESA concerning potential impacts of Canada goose damage management methods on T&E species and has obtained a Biological Opinion (USDI 1992). For the full context of the B.O., see Appendix F of the ADC Final EIS (USDA 1994, Appendix F).

WS reviewed the Wisconsin Endangered and Threatened Species Laws and List (WDNR 1997), and the USFWS's list of federal T&E species for Wisconsin (www.endangered.fws.gov/listdata.html), to make a determination of whether any species might be affected by the proposed action. The only method described in the proposed action that could be employed by WS and which has the potential for non-target take is AC. There is the potential to capture some non-target wildlife such as American coots, American crows, Common grackles, or house sparrows with AC, but they can be released unharmed upon recovery. A formal risk assessment of WS methods showed no probable risk from primary (e.g., from ingestion of AC treated baits) or secondary (e.g., from scavenging on birds that have eaten AC treated baits) exposure to AC, and determined no hazards to water resources (USDA 1994: Appendix P, p. 181-184). WS has received concurrence from the USFWS and the WDNR with our determination that the proposed action would not affect T&E species (site specific informal consultation would be conducted at some locations) (J. Smith Infor. Section 7 Consul. Letter to J. Maestrelli June 13, 2000, S. Holtz Infor. Consul. Letter to J. Maestrelli June 16, 2000).

In addition, WS abides by laws and regulations of the MBTA regarding migratory birds (50 CFR§21). Non-target migratory bird species usually are not affected by WS's management methods, except for the occasional scaring from scaring devices. WS non-lethal management may be conducted throughout the year. In these cases, migratory birds may temporarily leave the immediate vicinity of scaring, but would most likely return after conclusion of the action.

Certain methods of reducing damage which are considered non-lethal for Canada geese, such as electric fencing along shorelines, may affect and be lethal to non-target reptiles (e.g., turtles) which become entangled in the fence. However, when this method is employed by WS, all electrified wires are placed high enough off the ground to allow for the unimpeded movement of reptiles. Electric fencing and barrier fencing can also inhibit other non-target species of wildlife (e.g., muskrat, beaver, and otter) use of habitat near bodies of water.

Based on the above analysis, WS has determined that the proposed action would have no effect on any listed species, and WS has conducted and received concurrence on an informal Section 7 consultation with the USFWS for concurrence on this conclusion.

4.1.5.2 Alternative 2. Technical Assistance RCGDM Only by WS (No Action)

The application and success of non-lethal and lethal management methods implemented by private individuals would be variable depending upon their knowledge level and how they implement their program. Certain methods of reducing damage which are considered non-lethal for Canada geese, such as electric fencing along shorelines, may affect and be lethal to non-target reptiles (e.g., turtles) which become entangled in the fence. There is the potential for private individuals to construct electric fencing in a manner that may impact T&E species (non-target reptiles). Proper identification and knowledge of non-target and T&E species biology would be critical to avoid impacts on these species. It is possible that the impact on non-target wildlife populations, including T&E species would be similar or greater to 4.1.5.1.

4.1.5.3 Alternative 3: Non-lethal and Technical Assistance RCGDM Only by WS

WS would not be involved in lethal damage management, but the actions of others may impact non-target and T&E species. Individuals implementing management methods may cause impacts similar to 4.1.5.2, or may pose greater affects on non-target and T&E species.

4.1.5.4 Alternative 4: No Federal WS RCGDM

No Federal WS RCGDM would result in no impact on non-target, T&E species by WS. The impact of others on non-target, T&E species, in the absence of WS, would be unknown.

4.2 CUMULATIVE IMPACTS

Cumulative impacts are impacts on the environment that result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions. Table 3 (Appendix D) provides a comparison of impacts of the alternatives considered.

Cumulative impacts of public actions to reduce resident Canada goose damage in the absence of WS assistance (Alternative 4) can only be speculated. Similarly, cumulative impacts of public actions to reduce resident Canada goose damage in the absence of WS direct damage management assistance (Alternative 2) can only be speculated. However, it is reasonable to expect that as governmental assistance in resolving wildlife conflicts decreases, independent actions increase. The environmental desirability of these actions would be dependent upon the individuals who implement them. Many such actions would be poorly monitored, and public accountability would likely be low. For these reasons, cumulative impacts to the environment may be expected to increase as WS assistance decreases.

During the early goose hunting season, WDNR records indicate a maximum of 10,506 birds have been harvested in a year (Bergquist et al. 2000). Resident Canada geese comprise an increasing percentage of the regular season goose harvest each year. Resident Canada goose spring populations have been increasing at and are estimated to increase in the future at 11% annually (R. Gatti, WDNR, April 2000, pers. comm.). Despite the fact that hunters took 17,108 resident geese in 1999 (Bergquist et al. 2000), the spring 2000 resident goose population increased 30% to 102,600 geese (J. Bergquist, WDNR, June, 2000, pers. comm.). Therefore, WS removing and/or relocating a maximum of 3000 geese per year under the Proposed Alternative 1 would not result in significant cumulative impacts on the local, statewide or Mississippi Flyway Canada goose populations.

The scope of this proposal and the number of resident Canada geese that might be removed by WS under Alternative 1 or Alternative 3 would result in no adverse cumulative direct or indirect impacts (Table 3). WS maintains ongoing contact with USFWS and WDNR and submits annual migratory bird activity reports to the USFWS. The USFWS monitors the total take of Canada geese from all sources and factors in survival rates from predation, disease, etc. Ongoing contact with USFWS and WDNR assures local, state and regional knowledge of wildlife population trends. While local populations of resident Canada geese may be reduced, the federal and state permitting processes under which management actions will be implemented will ensure that the regional and statewide population will not be reduced below the spring population goals identified in the Giant Canada Goose Management Plan for Wisconsin (WDNR 1994) and the Mississippi Flyway Giant Canada Goose Management Plan (Mississippi Flyway Technical Section 1996). WS would have no adverse cumulative impact on non-target species, T&E species. This finding was also made on a national level (USDA 1994).

This EA will be reviewed annually to assure conformance with current environmental regulations and project scope. Substantial changes in the project scope or changes in environmental regulations may trigger the requirement for a new or revised EA.

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APPENDIX A

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APPENDIX B

Resident Canada Goose Damage Management Methods Available for Use or
Recommended by the Wisconsin Wildlife Services Program

The most effective approach to resolving wildlife damage problems is to integrate the use of several methods, either simultaneously or sequentially. Integrated Wildlife Damage Management (IWDM) would integrate and apply practical methods of prevention and reduce damage by wildlife while minimizing harmful effects of damage reduction measures on humans, other species, and the environment. IWDM may incorporate resource management, physical exclusion and deterrents, and population management, or any combination of these, depending on the characteristics of specific damage problems.

In selecting damage management techniques for specific damage situations, consideration is given to the responsible species and the magnitude, geographic extent, duration and frequency, and likelihood of wildlife damage. Consideration is also given to the status of target and potential non-target species, local environmental conditions and impacts, social and legal aspects, and relative costs of damage reduction options. The cost of damage reduction may sometimes be a secondary concern because of the overriding environmental, legal, and animal welfare considerations. These factors are evaluated in formulating damage management strategies that incorporate the application of one or more techniques.

A variety of methods are potentially available to the WS program in Wisconsin relative to the management or reduction of damage from of resident Canada geese. WS develops and recommends or implements IWDM strategies based on resource management, physical exclusion and wildlife management approaches. Within each approach there may be available a number of specific methods or tactics.

Various federal, state, and local statutes and regulations and WS directives govern WS use of damage management tools and substances. The following methods and materials are recommended or used in technical assistance and direct damage management efforts of the WS program in Wisconsin. The effectiveness of the program can be defined in terms of reduced economic losses, decreased health hazards, minimized property damage and improved quality of life.

RESOURCE MANAGEMENT

Resource management includes a variety of practices that may be used by resource owners to reduce the potential for wildlife damage. Implementation of these practices is appropriate when the potential for damage can be reduced without significantly increasing a resource owner's costs or diminishing his/her ability to manage resources pursuant to goals. Resource management recommendations are made through WS technical assistance efforts.

Habitat Alteration: Habitat alteration can be the planting of vegetation unpalatable to wildlife or altering the physical habitat (Conover and Kania 1991, Conover 1992). Conover (1991^a, 1991^b) found that even hungry Canada geese refused to eat some ground covers such as common periwinkle (*Vinca minor*), English ivy (*Hedera helix*) and Japanese pachysandra (*Pachysandra terminalis*). Planting less preferred plants or grasses to discourage geese from a specific area could work more effectively if good alternative feeding sites are nearby (Conover 1985). However, the manipulation of turf grass varieties in urban/suburban, heavy use situations in Wisconsin such as parks, athletic fields and golf courses is often not feasible. Varieties of turf grass that grow well in Wisconsin and can withstand regular mowing and regular/heavy human use include: Kentucky blue grass, red fescue, perennial bent grass, perennial rye grass and white clover. All of these grasses are appealing to Canada geese. The turf grass varieties that are not appealing to Canada geese such as, tall fescue, orchard grass and timothy, do not withstand regular mowing and/or regular/heavy human use.

Fences, hedges, shrubs, boulders, etc. can be placed at shorelines to impede goose movements. Restricting a goose's ability to move between water and land will deter geese from an area, especially during molts (Gosser et al. 1997). However, people are often reluctant to make appropriate landscape modifications to discourage goose activity (Breault and McKelvey 1991, Conover and Kania 1991). Unfortunately, both humans and geese appear to find lawn areas near water attractive (Addison and Amernic 1983, Cooper^a In Press), and conflicts between humans and geese will likely continue wherever this interface occurs. Cooper (1998) reported that 93% of current shoreline

turf, in the Twin Cities Metro area, would be needed to be modified to limit the goose population to established goals, and this approach may be unacceptable to the human residents. To limit the resident goose population size in the Twin Cities region of Minnesota, Cooper (1998) estimated costs of modifying habitat at \$33.9 million for tall grass prairie and \$1.8 billion for ground juniper (*Juniperus spp.*). Therefore, he concluded that shoreline habitat modification as a population management tool would be prohibitively expensive.

Removal of water bodies would likely reduce the attractiveness of an area to waterfowl. Urban/suburban Canada geese tend to feed near bodies of water with a distant view over short grass (Conover and Kania 1991). Draining/removal of water bodies is considered unreasonable and aesthetically unacceptable. The draining of wetlands is strictly regulated and must be permitted by the U.S. Army Corps of Engineers and the WDNR.

Lure Crops: Lure crops are food resources planted to attract wildlife away from more valuable resources (e.g., crops). This method is largely ineffective for urban resident Canada geese since food (turf) resources are readily available. For lure crops to be effective, the ability to keep birds from surrounding fields would be necessary, and the number of alternative feeding sites must be minimal (Fairaizl and Pfeifer 1988). Additionally, lure crops reduce damage for only a short time (Fairaizl and Pfeifer 1988) and damage by resident Canada geese is generally continuous. The resource owner is limited in implementing this method contingent upon ownership of, or otherwise ability to manage the property. Unless the original waterfowl-human conflict is resolved, creation of additional waterfowl habitat could increase future conflicts. The WDNR has not generally planted lure/share crops on their properties, which have significant goose use, since the late 1970's/ early 1980's. This state owned tillable land was insufficient in size to provide enough food for a significant time period, and for the fact that white-tailed deer tended to consume the entire crop. This land was determined to be more beneficial if it was planted to native grasses desirable for bird nesting (B. Wheeler, WDNR, April, 2000, pers. comm.).

Lure crops are likely still planted on some land held in private ownership, such as conservation clubs, throughout Wisconsin. These plantings may provide some additional food or act as an attractant for resident geese. However, it is highly unlikely they contribute to conflicts with geese or act as significant goose attractants when one considers that 13,817,000 acres of the state are in corn, wheat, hay and soybean production (Battaglia et al. 1999) which provides high quality food for geese most of the year.

Modify Human Behavior: Artificial feeding by people attracts and sustains more waterfowl in an area than could be supported by natural food supplies. This unnatural food source exacerbates damage by resident geese and would recommend that it be eliminated. The elimination of feeding of waterfowl is a primary recommendation made by WS, and many local municipalities have adopted policies prohibiting it. Some parks have posted signs, and there have been efforts made to educate the public on the negative aspects of feeding waterfowl. However, many people do not comply, and the policies are poorly enforced in some areas.

Alternatively, some entities encourage/permit the feeding of geese because the goose population in the location has not exceeded their WAC. It is unlikely that the feeding of geese in these locations would significantly contribute to conflicts with geese in other communities or locations.

Alter Aircraft Flight Patterns: In cases where the presence of waterfowl at airports results in threats to air traveler safety and when such problems cannot be resolved by other means, the alteration of aircraft flight patterns or schedules may be recommended. However, altering operations at airports to decrease the potential for hazards is not feasible unless an emergency situation exists. Otherwise, the expense of interrupted flights and the limitations of existing facilities make this practice prohibitive.

Removal of Domestic Waterfowl: Flocks of urban waterfowl are known to act as "decoys" and attract migrating waterfowl (Crisley et al. 1968, Woronecki 1992, AAWV undated). Rabenold (1987) and Avery (1994) reported that birds learn to locate food resources by watching the behavior of other birds. The removal of domestic waterfowl

from ponds removes birds that act as “decoys” in attracting Canada geese. Domestic and feral geese could also carry diseases which threaten wild populations (AAWV undated). Resource owners may be reluctant to remove some or all decoy birds because of the enjoyment of their presence.

PHYSICAL EXCLUSION AND DETERRENTS

Physical exclusion and deterrents restrict the access of wildlife to resources and/or alter behavior of target animals to reduce damage. These methods provide a means of appropriate and effective prevention of resident Canada goose damage in many situations.

Electric Fence: The application of electrified fencing is generally limited to rural settings, due to the physical nature of electricity interacting with people and pets. Electrified netting and multiple electrified strands of fence have been implemented in Wisconsin. This practice has been used to keep geese enclosed within wetland complexes, and to exclude them from agricultural fields susceptible to goose damage. Limits of this application arise where there are multiple landowners along the wetland, and the size of the agricultural field and its proximity to wetlands inhabited by resident geese. Perceptions from Minnesota on the effectiveness of electric fences were high (Cooper and Keefe 1997). This abatement method has been used in the Wisconsin Wildlife Damage Abatement and Claims Program to reduce crop damage caused by resident geese in rural locations. While electric fencing may be effective in repelling geese in some urban settings in Wisconsin, its use is often prohibited in many municipalities for human safety reasons. Problems that typically reduce the effectiveness of electric fences include; vegetation on fence, flight capable geese, fencing knocked down by other animals (e.g., white-tailed deer and dogs), and poor power.

Barrier Fence: The construction or placement of physical barriers has limited application for resident geese. Barriers can be temporary or permanent structures. Lawn furniture/ornaments, vehicles, boats, snow fencing, plastic hazard fencing, metal wire fencing, and multiple strand fencing have all been used in Wisconsin to limit the movement of resident geese. Perceptions from Minnesota indicate that permanent barriers were highly effective, while temporary barriers were moderately effective (Cooper and Keefe 1997). The application of this method is limited to areas that can be completely enclosed and do not allow geese to land inside enclosures. Similar to most abatement techniques, this method has been most effective when dealing with small numbers of breeding geese and their flightless goslings along wetlands and/or waterways. Unfortunately, there have been situations where barrier fencing designed to inhibit goose nesting has entrapped goslings and resulted in starvation (Cooper 1998).

The preference for geese to walk or swim, rather than fly, during this time period contributes to the success of barrier fences. Geese that are capable of full or partial flight render this method useless, except for enclosed areas small enough to prevent landing. However, site specific habitat alterations have merit, provided that landscape designs are based on biological diversity and human safety objectives (Cooper^b In Press). To limit the resident goose population size in the Twin Cities region of Minnesota with wire fences, Cooper (1998) estimated it would cost \$12.3 million for 25 years.

Surface Coverings: Canada geese may be excluded from ponds using overhead wire grids (Fairaizl 1992, Lowney 1993). Overhead wire grids have been demonstrated to be most applicable on ponds \leq two acres, but wire grids may be considered unsightly or aesthetically unappealing to some people. Wire grids render a pond unusable for boating, swimming, fishing, and other recreational activities. Installation costs are about \$1,000 per surface acre for materials. The expense of maintaining wire grids may be burdensome for some people.

Balls approximately five inches in diameter can be used to cover the surface of a pond. A “ball blanket” renders a pond unusable for boating, swimming, fishing, and other recreational activities. This method is very expensive, costing about \$131,000 per surface acre of water.

Visual Deterrents: Reflective tape has been used successfully to repel some birds from crops when spaced at three

to five meter intervals (Bruggers et al. 1986, Dolbeer et al. 1986). Mylar flagging has been reported effective at reducing migrant Canada goose damage to crops (Heinrich and Craven 1990). Flagging is impractical in many locations and has met with some local resistance due to the negative aesthetic appearance presented on the properties where it is used. Other studies have shown reflective tape ineffective (Tobin et al. 1988, Bruggers et al. 1986, Dolbeer et al. 1986, Conover and Dolbeer 1989). While sometimes effective for short periods of time, reflective tape has proven mostly ineffective in deterring resident geese.

Mason et al. (1993) and Mason and Clark (1994) have shown white and black plastic flags to be effective at repelling snow geese from pastures when alternative grazing areas were available. However, some farmers in Wisconsin have reported that black plastic flags can actually attract geese to a location (R. Christian, Wisconsin WS, April, 2000, pers. comm.).

Mute Swans: Mute swans are ineffective at preventing Canada geese from using or nesting on ponds (Conover and Kania 1994). Additionally, swans can be aggressive towards humans (Conover and Kania 1994, Chasko 1986) and may have undesirable effects on native aquatic vegetation (Allin et al. 1987, Chasko 1986). Furthermore, Executive Order 11987 May 24, 1977, states that federal agencies shall encourage states, local governments, and private citizens to prevent the introduction of exotic species into the environment. Mute swans are classified as an exotic species.

Dogs: Dogs can be effective at harassing geese and keeping them off turf and beaches (Conover and Chasko 1985, Woodruff and Green 1995). Around water, this technique appears most effective when the body of water to be patrolled is less than two acres in size (Swift 1998). Although dogs can be effective in keeping geese off individual properties, they do not contribute to a solution for the larger problem of overabundant goose populations (Castelli and Sleggs 1998). Swift (1998) and numerous individuals in Wisconsin have reported that when harassment with dogs ceases, the number of geese return to pre-treatment numbers. WS has recommended and encouraged the use of dogs where appropriate. In Wisconsin, a permit from the WDNR is required to use dogs to chase geese for damage management purposes.

Repellents: Methyl anthranilate (MA) is a registered repellent for Canada geese is marketed under the trade names ReJeX-iT and Bird Shield. Results with MA appear mixed. Cummings et al. (1995) reported that MA repelled Canada geese from grazing turf for four days. However, Belant et al. (1996) found it ineffective as a grazing repellent when applied at 22.6 and 67.8 kg/ha which is the label rate and triple the label rate, respectively. MA is water soluble therefore, moderate to heavy rain or daily watering and/or mowing render MA ineffective. To use chemical repellents for goose damage management in Wisconsin requires a permit from the WDNR. Testing in numerous locations throughout Wisconsin during the 1990's indicated that in many situations MA is cost prohibitive, is only marginally effective in repelling geese, and commonly just causes geese to move to nearby untreated areas. (P. Vagnini, West Bend Parks, Recr. and For. Dept., April, 2000, ██████████, April, 2000, and G. Youngs, Milwaukee County Dept. Parks, Recr. and Culture, March, 2000, pers. comm.).

Research continues on other avian feeding repellents. A 50% anthraquinone product (FlightControl), shows promise for Canada geese (Dolbeer et al. 1998). Like MA, anthraquinone has low toxicity to birds and mammals. Activated charcoal has also been evaluated for use in deterring goose damage, but it requires frequent re-application to effectively reduce goose damage (Mason and Clark 1995). Further, laboratory and field trials are needed to refine minimum repellent levels and to enhance retention of treated vegetation (Sinnott 1998).

Hazing: Hazing reduces losses in those instances when the affected geese move to a more acceptable area. Achieving that end has become more difficult as the local goose population has increased. Birds hazed from one area where they are causing damage, frequently move to another area where they cause damage (Brough 1969, Conover 1984, Summers 1985, Swift 1998). Smith et al. (1999) noted that others have reported similar results,

stating: "...biologists are finding that some techniques (e.g., habitat modifications or scare devices) that were effective for low to moderate population levels tend to fail as flock sizes increase and geese become more accustomed to human activity". Generally speaking, birds tend to habituate to hazing techniques (Zucchi and Bergman 1975, Blokpoel 1976, Summers 1985, Aubin 1990).

Scarecrows: The use of scarecrows has had mixed results. Effigies depicting alligators, humans, floating swans and dead geese have been employed, with limited success for short time periods in small areas. An integrated approach (swan and predator effigies, distress calls and non-lethal chemical repellents) was found to be ineffective at scaring or repelling nuisance Canada geese (Conover and Chasko 1985). While Heinrich and Craven (1990) reported that using scarecrows reduced migrant Canada goose use of agricultural fields in rural areas, their effectiveness in scaring geese from suburban/urban areas is severely limited because geese are not afraid of humans as a result of nearly constant contact with people. In general, scarecrows are most effective when they are moved frequently, alternated with other methods, and are well maintained. However, scarecrows tend to lose effectiveness over time and become less effective as goose populations increase (Smith et al. 1999).

Distress Calls: Aguilera et al. (1991) found distress calls ineffective in causing migratory and resident geese to abandon a pond. Although, Mott and Timbrook (1988) reported distress calls as effective at repelling resident Canada geese 100 meters from the distress unit, the geese would return shortly after the calls stopped. The repellency effect was enhanced when pyrotechnics were used with the distress calls. In some situations, the level of volume required for this method to be effective in urban/suburban areas would be prohibited by local noise ordinances. A similar device, which electronically generates sound, has proven ineffective at repelling migrant Canada geese (Heinrich and Craven 1990).

Pyrotechnics: Pyrotechnics (screamer shells, bird bombs, and 12-gauge cracker shells) have been used to repel many species of birds (Booth 1994). Aguilera et al. (1991) found 15mm screamer shells effective at reducing resident and migrant Canada geese use of areas of Colorado. However, Mott and Timbrook (1988) and Aguilera et al. (1991) doubted the efficacy of harassment and believed that moving the geese simply redistributed the problem to other locations.

Fairaizl (1992) and Conomy et al. (1998) found the effectiveness of pyrotechnics highly variable among different flocks of waterfowl. Some flocks in urban areas required continuous day long harassment with frequent discharges of pyrotechnics. The geese usually returned within hours. A minority of resident Canada goose flocks in Virginia showed no response to pyrotechnics (Fairaizl 1992). Some flocks of Canada geese in Virginia have shown quick response to pyrotechnics during winter months suggesting migrant geese made up some or all of the flock (Fairaizl 1992). Shultz et al. (1988) reported fidelity of resident Canada geese to feeding and loafing areas is strong, even when heavy hunting pressure is ongoing. Mott and Timbrook (1988) concluded that the efficacy of harassment with pyrotechnics is partially dependent on availability of alternative loafing and feeding areas. Although one of the more effective methods of frightening geese away, more often than not they simply move geese to other areas. There are also safety and legal implications regarding their use. Discharge of pyrotechnics is inappropriate and prohibited in some urban/suburban areas. Pyrotechnic projectiles can start fires, ricochet off buildings, pose traffic hazards, trigger dogs to bark incessantly, annoy and possibly injure people.

Propane Cannons: Propane cannons are generally inappropriate for urban/suburban areas due to the repeated loud explosions, which many people would consider a serious and unacceptable nuisance. Although a propane cannon can be an effective dispersal tool for migrant geese in agricultural settings, resident geese in urban areas are more tolerant of noise and habituate to propane cannons in a relatively short period of time.

POPULATION MANAGEMENT

Methods of managing the local population density include relocation, contraception, egg destruction, capture with AC, toxicants, hunting and depredation permits, capture and process for human consumption.

Relocation: The relocation of resident Canada geese in Wisconsin has resulted in mixed success. Local populations of damaging geese were reduced and damage was decreased at specific problem sites. However, Canada geese have strong homing instincts, and some of the adult birds returned to nest again (J. Bergquist, WDNR, April, 2000, pers. comm. Cooper and Keefe (1997) found the rate of return of relocated geese to the capture sites was lowest for immatures and highest for adults. They reported 0–4% of relocated juveniles returned to capture sites and 42 - 80% of relocated adults returned to capture sites. Also, Fairaizl (1992) found 19% of relocated juveniles returned to the capture area. Smith (1996) reported groups of juvenile geese relocated from urban to rural settings can effectively eliminate geese from urban areas, retain geese at the release site, include them in the sport harvest, and expose them to higher natural mortality. Smith (1996) also reported that multiple survival models indicated that survival estimates of relocated juveniles were half of those of urban captured and released birds. Communities in Wisconsin from which juvenile geese have been relocated have experienced a significant, short-term reduction in the amount of goose droppings on their parks, athletic fields, and golf courses ([REDACTED], D [REDACTED], April 2000, pers. comm.). If this method is used to reduce damage in Wisconsin, only juvenile geese would be relocated.

Ultimately, the relocation of resident Canada geese from metropolitan communities can assist in the reduction of overabundant populations (Cooper and Keefe 1997), and has been accepted by the general public as a method of reducing goose populations to socially acceptable levels (Fairaizl 1992). In addition, the removal of geese posing or likely to pose a hazard to air safety at airports has been demonstrated to reduce the population of local geese and decrease the number of goose flights through the airport operations airspace; and resulted in increased air safety at the Minneapolis-St. Paul International Airport (Cooper 1991).

Relocation of resident geese has the potential to spread disease into populations of other and/or migrating waterfowl. The AAWV (undated) “..discourages the practice of relocating nuisance or excess urban ducks, geese and swans to other parks or wildlife areas as a means of local population control.”

The WDNR contacted wildlife management agencies of 49 states (excluding Hawaii) to determine if they were interested in obtaining resident Canada geese from Wisconsin. No states were willing to accept geese from Wisconsin (J. Bergquist, WDNR, April, 2000, pers. comm.). Subsequently, the WDNR has determined that, a limited number of juvenile resident Canada geese may be relocated to designated sites within the state. These relocations are not a population restoration effort, but rather would be allowed to alleviate nuisance situations and to provide additional hunting opportunities in the release areas. Potential release sites would be evaluated on the basis of suitable habitat, existing resident Canada goose populations, the risk of creating new nuisance situations, and survival rates of relocated birds. Prior to relocation, a subset of the population to be moved would be health-checked to prevent the transfer of disease (WDNR 2000). The pathogens which would be examined and the number of birds to be health-checked would be determined by WDNR, Bureau of Wildlife Management staff. Populations of resident Canada geese that fail this health-check may not be relocated and may be euthanized, depending on WDNR staff recommendations. In addition to the limited availability of locations for goose relocation, Cooper (1998) estimated it would cost \$125,000 per year for relocating geese to limit their population in the Twin Cities region of Minnesota. WS may capture geese which would be moved only to sites approved and selected by WDNR. If complaints arise outside of the 31 county core area of activity, they would be addressed on a case by case basis.

Contraception: Contraceptives have not proven to be an effective method for reducing damage, and there are no contraceptive drugs registered with the FDA for Canada geese. Although, Canada geese have been successfully vasectomized to reduce to prevent gosling production, this method is only effective if the female does not form a bond with a different male. In addition, vasectomies can only prevent the production of the mated pair. The ability to identify breeding pairs for isolation and to capture a male goose for vasectomization becomes increasingly difficult as the number of geese increase (Converse and Kennelly 1994). Canada geese have a long life span once they survive their first year (Cramp and Simmons 1977, Allan et al. 1995); leg-band recovery data indicate that some geese live longer than 20 years. The sterilization of resident Canada geese would not reduce the damage

caused by the overabundance of the goose population since the population of Canada geese would remain relatively stable. Keefe (1996) estimated sterilization to cost over \$100 per goose.

Egg Destruction: Egg addling, oiling, freezing, egg replacement, or puncturing can be effective in reducing recruitment into the local population (Christens et al. 1995, Cummings et al. 1997). While egg removal/destruction can reduce production of goslings, merely destroying an egg does not reduce a population as quickly as removing immature or breeding adults (Cooper and Keefe 1997). As with other species of long-lived geese, which require high adult mortality to reduce populations (Rockwell et al. 1997), it is likely that adult resident Canada geese must be removed to reduce the population to a level deemed acceptable to communities. Approximately five eggs must be removed to have the effect of stopping one adult from joining the breeding population (Rockwell et al. 1997, Schmutz et al. 1997). Keefe (1996) estimated egg destruction to cost \$40 for the equivalent of removing one adult goose from the population. In addition, nest destruction is estimated to cost significantly more than other forms of population management (Cooper and Keefe 1997). Egg destruction, while a valuable tool, has fallen short as a single method for reducing local goose populations. Many nests cannot be found by resource managers in typical urban settings due to the difficulties in gaining access to search the hundreds of private properties where nests may occur. In addition, geese which have eggs oiled in successive years may learn to nest away from the water making it more difficult to find nests.

Capture With AC: AC may be used only by WS personnel to capture waterfowl. Pursuant to FDA restrictions, waterfowl captured with AC for subsequent euthanasia must be killed and buried or incinerated, or be held alive for at least 30 days, at which time the birds may be killed and processed for human consumption.

Toxicants: All pesticides are regulated by the EPA. There are currently no toxicants registered with the EPA for use on Canada geese and therefore none would be used by WS.

Hunting and Depredation Permits: WS sometimes recommends that resource owners consider legal hunting as an option for reducing goose damage. Although legal hunting is impractical and/or prohibited in many urban/suburban areas, it can be used to reduce some populations of resident Canada geese. Legal hunting also reinforces harassment programs (Kadlec 1968). Zielske et al. (1993) believed legal hunting would not reduce Canada goose populations where there is limited interest in legally hunting resident Canada geese. However, hunting has had a major impact on the distribution of geese in the Minneapolis-St. Paul Metro Area of Minnesota (Cooper and Keefe 1997). They reported goose densities during the summer in hunted areas of the Metro Area (which comprised only 23% of the area) were significantly lower (three times lower) than densities in unhunted areas. Similarly, Conover and Kania (1991) reported that geese were more likely to cause damage in areas that goose hunting was prohibited. Even in urban/suburban areas (e.g., golf courses and green spaces) there may be locations where controlled hunting would be effective in reducing goose damage.

In response to growing problems caused by resident Canada geese, the WDNR has initiated early season hunts to target resident geese. The area open to these hunts has increased dramatically, along with the daily bag limit. The entire state of Wisconsin is scheduled for the Early September Canada goose season in 2000. It is known that goose use of urban areas open to legal hunting may be reduced (Cooper and Keefe 1997). However, the increase in bag limits and areas open to hunting has only had a minor affect on Wisconsin's overall resident goose population.

Depredation permits can be highly effective in removing birds from specific areas and in supplementing harassment. These permits are issued by the USFWS to requesters or property owners for the purpose of reducing conflicts caused by Canada geese and migratory birds for a \$25.00 fee. WS sometimes recommends to the USFWS that depredation permits be issued to specific property owners, particularly when human health is jeopardized.

Shooting: Shooting is the practice of selectively removing target birds by shooting with a shotgun or pellet gun. Shooting a few individuals from a larger flock can reinforce birds' fear of harassment techniques. Shooting is used

to reduce goose problems when lethal methods are determined to be appropriate. The birds are killed as quickly and humanely as possible.

Capture and Process for Human Consumption: The most efficient way to reduce the size of an urban flock is to increase mortality among adult geese. Nationwide, hunting is the major cause of goose mortality, but geese may seldom be available to hunters in an urban environment (Conover and Chasko 1985, Smith et al. 1999). For purposes of lethal control, resident geese are usually captured with rocket nets, drive traps, net guns, dip nets, and/or by hand. Rocket netting involves the setting of bait in an area that would be completely contained within the dimensions of a manually propelled net. The launching of the rocket net occurs too quickly for the geese to escape. Rocket netting may take place anytime during the year. Using a net gun to capture geese can be conducted anytime during the year by firing a net from a shoulder mounted gun.

The molt process, when resident Canada geese are flightless, occurs from early-June through mid-July. Migrant Canada geese are present in Wisconsin from mid-September through April and do not cause the majority of the conflicts in urban/suburban locations. Therefore, capture and processing of resident Canada geese for human consumption would be restricted to the period from May through September 15th, although WS may conduct activities at any time, as appropriate. Resident Canada geese captured during this period may be processed for human consumption and donated to charitable organizations.

To ensure that Canada geese captured and processed are safe for human consumption, the WDNR has established a protocol requiring geese from each community/locale to be sampled for contaminants known to be harmful to human health (WDNR 2000). Geese captured for contaminant testing would be euthanized following methods recommended by the AVMA such as asphyxiation by carbon dioxide gas (CO₂). The contaminant analyses would be conducted by certified laboratories. The WDNR Wildlife Health Team, in consultation with the WDHFS, would evaluate whether the contaminant levels meet safe human consumption levels and make recommendations if utilization for donation to food pantries is safe. In addition, geese would only be processed by facilities licensed by the state governing authority. Geese determined to be unsuitable for human consumption by WDNR in consultation with WDHFS, will be disposed of as directed by the permitting agencies (USFWS and WDNR).

The advantages of lethal damage management by WS are that it would be applied directly to the problem population, its effects are obvious and immediate, and it carries no risk that the geese will return or move and create conflicts elsewhere. The primary disadvantage is that it is sometimes more socially controversial than other techniques. The use of lethal methods to reduce Canada goose damage can be very effective at alleviating damage and the most economical approach to reducing damage when compared to non-lethal methods (Cooper and Keefe 1997). Additionally, capture and removal of Canada geese is the most cost effective lethal method to reduce damage, except for hunting (Cooper and Keefe 1997). Moreover, the use of lethal methods has longer effectiveness than non-lethal methods because it would likely take months to years before the original local population level of Canada geese returned. Lethal methods would also reduce conflict among resource owners whereas non-lethal actions only move the Canada geese among resource owners (i.e., spread the damage) (Cooper and Keefe 1997, Smith et al. 1999), and possibly leave resource owners with the fewest financial means burdened with the Canada geese and the damage.

It is estimated it to cost \$18-25 per goose for capture and processing for human consumption (Keefe 1996, Cooper and Keefe 1997). To limit the resident goose population in the Twin Cities region of Minnesota with capture and processing, it was estimated to cost \$325,000 per year (Cooper 1998). This method at least 50% less expensive than egg/nest destruction, sterilization, or habitat modification (Keefe 1996).

APPENDIX C

Figures 1-8

APPENDIX D

Tables 1-3

Table 1: Number of Canada Geese Transported by the WDNR within Wisconsin
1966-68 and 1979-96.

Year	Brown County	Southeast Wisconsin
1966	38	0
1967	31	0
1968	30	0
1979	0	0
1980	0	0
1981	0	0
1982	78	0
1983	75	0
1984	140	0
1985	0	0
1986	170	11
1987	144	7
1988	160	0
1989	186	279
1990	173	242
1991	189	345
1992	180	330
1993	142	39
1994	175	0
1995	122	0
1996	100	0
TOTAL	2133	1253

Table 2: Number of Geese Transported by the WDNR from Green Bay to Outside Wisconsin 1982-1997.

YEAR	Oklahoma	Kansas
1982	300	0
1983	0	290
1984	0	229
1985	0	286
1986	0	0
1987	0	150
1988	0	400
1989	0	382
1990	0	505
1991	0	521
1992	0	439
1993	0	360
1994	0	0
1995	0	0
1996	0	0
1997	0	0
TOTAL	300	3562

Table 3: A comparison of Impacts of Alternatives Considered in this Environmental Assessment.

IMPACTS	ALTERNATIVE 1 Integrated Wildlife Damage Management/Resident Canada Goose Damage Management Program {RCGDM} (Proposed Action)	ALTERNATIVE 2 Technical Assistance RCGDM only by WS (No Action)	ALTERNATIVE 3 Non-Lethal and Technical Assistance RCGDM only by WS	ALTERNATIVE 4 No Federal WS RCGDM Action
EFFECTS ON TARGET SPECIES POPULATIONS	A minimal number of geese would likely be killed or relocated in a given year. Local resident Canada goose populations deemed above acceptance capacity by the requesters may be reduced. Federal and State permitting would ensure populations would not be reduced below population management goal.	No impact on population by WS due to no direct damage management assistance. Private management efforts would increase and may lead to drastic and unconventional action. Impacts and hypothetical risks of illegal actions would be greater than Alternative 1. Resident Canada goose populations would likely increase. Local populations may decrease where hunting is allowed. Overall impact similar to Alternative 1 due to permitting.	Technical assistance would continue as in Alternative 2, direct damage management assistance would be limited to non-lethal methods. Private actions would likely increase. Impacts and hypothetical risks of illegal action and overall population affects would be similar to Alternative 2.	WS would have no impact. Private actions would increase and be eligible for all methods, which may result in unpredictable effects on local resident Canada goose populations. Overall population would likely be unaffected due to Federal and State permitting and management goals, but may be unpredictable due to illegal actions.
METHODS	Allows for the largest array of methods and therefore would be most effective at reducing or minimizing damage. Flexibility to use lethal and non-lethal methods would maximize effectiveness.	Conflicts would likely increase due to the limited options available to WS to recommend. Lethal control by others would be available with unpredictable results.	Non-lethal direct damage management assistance would have similar impacts as Alternative 2, but possibly improved success due to proper application and maintenance. Technical assistance for lethal methods may have limited success and likely have unpredictable results.	Least effective alternative. Complainants may not get information on available methods. Management actions may not be comprehensive and would likely be less effective.
AESTHETICS	Aesthetics is subjective. Resource owners would likely favor this alternative due to the availability of all options. Offers long-term results. Impacts on individual aesthetics will vary depending upon personal attitudes. Local governing bodies would decide management approaches for goose populations.	Aesthetics, being individually subjective, would likely not be improved due to lack of comprehensive management plan.	Similar to Alternative 2, except WS use of non-lethal direct management methods may reduce the potential for displaced geese to cause damage at other sites.	Unpredictable changes due to no WS involvement. Would likely result in more adverse effects on aesthetic values because programs may not be as complete or effective as possible, depending upon the comprehensiveness the damage management information received from other sources.

Table 3: A comparison of Impacts of Alternatives Considered in this Environmental Assessment.

IMPACTS	ALTERNATIVE 1 Integrated Wildlife Damage Management/Resident Canada Goose Damage Management Program {RCGDM} (Proposed Action)	ALTERNATIVE 2 Technical Assistance RCGDM only by WS (No Action)	ALTERNATIVE 3 Non-Lethal and Technical Assistance RCGDM only by WS	ALTERNATIVE 4 No Federal WS RCGDM Action
HUMANENESS AND ANIMAL WELFARE	Humaneness and animal welfare concerns would be comprehensively addressed by implementation of all available methods by trained professionals. Humaneness and animal welfare would be considered before any and all actions.	Similar humaneness and animal welfare concerns as Alternative 1. Implementation of methods by others may not consider humaneness and animal welfare.	WS would only use non-lethal methods in damage management assistance. Non-lethal direct management and technical assistance would likely be ineffective and concerns of humaneness and animal welfare would likely be similar to Alternative 1, but may not be considered. Lethal methods would be available for use by private sector.	WS would provide no assistance. This alternative would most likely result in impacts to humaneness similar to Alternative 1. Impacts and hypothetical risks of killing geese would probably be greater than Alternative 1.
EFFECTS ON NON-TARGET WILDLIFE INCLUDING T&E SPECIES	Effect on non-target species, from the proposed action would be minimal. Temporary scaring effect from sound devices possible for non-target birds. Minimal take of non-target species with AC, but they will be released unharmed. Electric fencing would be of design so as not to impede reptile movement. Fencing can inhibit other non-target species use of habitat near bodies of water.	Highly variable impact on non-target species depending upon method(s) implemented. Proper identification and knowledge of non-target species critical to avoid adverse affects. Impact on non-target species possible. Effects on non-target birds and non-target reptiles likely similar to or greater to Alternative 1.	WS would not conduct lethal damage management, but actions of others may adversely affect non-target species. Individuals implementing methods may cause impacts similar to Alternative 1, or may pose greater possibility of affecting non-target and/or T&E species. Effects on non-target birds and non-target reptiles likely similar to or greater than Alternative 1.	WS would have no impact on non-target species. Impact of others on non-target species would be unknown.