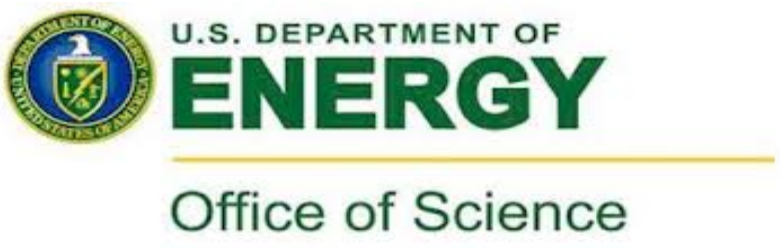
Environmental Assessment
for the
Management of the
White-tailed Deer (*Odocoileus virginianus*)
Population at
Brookhaven National Laboratory
Upton, NY



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Contents

1.0 Introduction

The United States (U.S.) Department of Energy (DOE) has prepared this Environmental Assessment (EA) to evaluate the potential environmental consequences of managing the white- tailed deer population on the Brookhaven National Laboratory (BNL) site.

The preferred alternative is to utilize Integrated Wildlife Damage Management (IWDM) which is comprised of a number of management strategies ranging from education of affected humans, manipulation of landscaping to reduce impacts from deer, to formal management of deer populations through hunting and/or culling. The IWDM approach was fully evaluated by New York State and the USDA- Wildlife Services in an Environmental Assessment (USDA 2003). Other alternatives considered both assessed and not assessed are also described in this EA and the two referenced EAs (USDA-WS and U.S. Fish and Wildlife Service EA for Deer Management at Wertheim National Wildlife Refuge). These documents are available at http://www.bnl.gov/ewms/compliance/nepa.asp.

This EA will be used to determine whether a "Finding of No Significant Impact (FONSI)" to the environment would result from the proposed action or whether an Environmental Impact Statement (EIS) must be prepared. This document complies with the National Environmental Policy Act (NEPA) of 1969, as amended (42 USC 4321-4347); the Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 CFR 1500-1508); and the DOE NEPA Regulations (10 CFR 1021).

2.0 Summary

Deer management has been identified as a need at BNL for more than a decade. In working toward deer management BNL has investigated multiple mechanisms, held information sessions, polled its employees, discussed the issue with regulatory and resource agencies and has come to the point of implementation. In so doing, this document has been prepared with the goal of incorporating the findings of two recent EAs (USDA-WS 2003, USFWS 2007). The findings within those assessments would essentially be equal to what would occur at BNL should No Action, Hunting, or IWDM approaches be taken (see Sections 5.1 through 5.4 below). The impacts of the hunting alternative under the USFWS EA would be indicative of what would be expected in this EA under IWDM since deer populations would be reduced to 30 deer/sq.mi. or less. Table 1 below provides a summary of alternatives based on the two EAs and the analysis within this document. BNL proposes to utilize the Preferred Alternative (IWDM) approach as the basis for deer management at BNL. This approach provides the greatest flexibility in meeting the management challenge of reducing the large deer numbers present on the BNL to acceptable levels that are protective of deer health, ecosystem health, and employee health and safety.

Table 1: Summary of Potential Environmental Impacts and Controls for the No Action Alternative, Hunting Alternative and the Preferred Alternative (IWDM).			
Comparison Factors	**No Action: BNL Current Operations**	**Hunting Only**	**IWDM**
General Information	No change from the existing BNL operations.	BNL would establish a hunting program similar to that described in the U.S. Fish & Wildlife Service EA for Wertheim NWR. Hunting would occur during the regular October through January hunting seasons. BNL would specify hunting methods, number of antlerless deer that had to be taken prior to taking a buck (Earn and Buck Program), location for hunts, and encourage hunters to donate meat through local "Hunters for the Hungry" programs.	BNL would utilize one or more of the methodologies described in the USDA-Wildlife Services EA for deer management in New York. This approach is the most flexible and encourages education of the affected human population, use of deer resistant plantings, repellents, and management of deer populations through various means. The use of IWDM allows the flexibility to adapt management approaches based on changing needs and population levels of the local deer population.
Ecological Resources	Continued high deer populations would continue to impact forest regeneration, ground nesting birds, and rare plants	Hunting alone is not likely to result in improvements in ecological resources. This approach would require deer to move away from the constructed portion of the laboratory where they are concentrated, to the surrounding woodlands. Hunting would likely not keep up with reproductive inputs, thus deer populations would continue to fluctuate as in the past and would continue to cause damage to ecological resources.	The flexibility of IWDM would allow BNL to rapidly reduce the deer population from the current estimated 630 animals to a range between 80 and 250. The more rapidly the population is brought down to a sustainable level the sooner ecological impacts from the high deer population can begin reversing. Expected results of a lower deer population on the local ecosystem were evaluated in the U.S. FWS EA for Deer Management at Wertheim NWR. Documentation indicated that in areas where populations were reduced to 30 deer/sq. mi. or less, forest recovery occurred and browse lines disappeared. Increases in small mammal populations and increased use of forest by migratory birds, especially ground nesting birds are expected outcomes.

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Comparison Factors	**No Action: BNL Current Operations**	**Hunting Only**	**IWDM**
Water Resources	No change from the existing BNL site conditions.	No change from the existing BNL site conditions.	No change from the existing BNL site conditions.
Land Use, Demography, and Environmental Justice	No change from the existing BNL site conditions.	Areas of the Laboratory would be isolated from general access seasonally when hunting is occurring. No change in demography would occur. Hunters would be encouraged to donate meat through local "Hunters for the Hungry" programs benefiting disadvantaged populations.	Areas where deer management is being implemented may be temporary closed off to lab personnel. These periods would be minimal and not likely to impact Lab operations. No change in demography would occur. On a seasonal basis, BNL would test and release large amounts of deer meat to local food pantries or soup kitchens from culling of the population.
Socioeconomic Factors	No change from the existing BNL site conditions and operations.	No change from the existing BNL site conditions.	No change from the existing BNL site conditions.
Transportation	No change from the existing BNL site conditions.	No change from the existing BNL site conditions.	No change from the existing BNL site conditions.
Cultural Resources	No change from the existing BNL site conditions.	No change from the existing BNL site conditions.	No change from the existing BNL site conditions.
Air Quality	No change from the existing BNL site conditions.	No change from the existing BNL site conditions.	No change from the existing BNL site conditions.
Climate	No change from the existing BNL site conditions.	No change from the existing BNL site conditions.	No change from the existing BNL site conditions.

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Visual Quality	No change from the existing BNL site conditions.	No change from the existing BNL site conditions.	No change from the existing BNL site conditions.
Noise	No change from the existing BNL site conditions.	No change from the existing BNL site conditions.	No change from the existing BNL site conditions.
Industrial Safety and Occupational Health	No change from the existing BNL site conditions.	No change from the existing BNL site conditions.	No change from the existing BNL site conditions. Lowering of the deer population would lessen the potential for car/deer or human/deer accidents to occur.
Radiological Characteristics	No change from the existing BNL site conditions.	No change from the existing BNL site conditions.	No change from the existing BNL site conditions.
Natural Hazards	No change from the existing BNL site conditions.	No change from the existing BNL site conditions.	No change from the existing BNL site conditions.
Intentional Destructive Acts	No change from the existing BNL site conditions.	Based on experience from other areas initiating hunting, some protests may occur but with little likelihood of destructive acts.	Based on experience by others initiating lethal removal actions some destructive acts could occur to Lab property and/or personal property of specific individuals. Lab security would likely prevent destructive acts to government property. Acts against private property would be reported to appropriate law enforcement.
Utilities	No change from the existing BNL site conditions.	No change from the existing BNL site conditions.	No change from the existing BNL site conditions.

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Electric and Magnetic Fields (EMF)	No change from the existing BNL site conditions and operations.	No change from the existing BNL site conditions and operations.	No change from the existing BNL site conditions and operations.
Waste Management and Pollution Prevention (P2)	No change from the existing BNL site conditions and operations.	No change from the existing BNL site conditions and operations.	No change from the existing BNL site conditions and operations.
Commitment of Resources	No change from the existing BNL site conditions.	No change from the existing BNL site conditions.	No change from the existing BNL site conditions.
Decommissioning and Restoration	Not applicable.	Not applicable.	Not applicable.
Cumulative Impacts	No significant impacts from this and other projects under development would occur. Future projects requiring clearing of habitat could further increase deer densities causing additional damage to the forest ecosystem.	Recent approved projects under construction have resulted in approximately 215 acres of habitat being cleared or isolated from deer use, resulting in a slight increase in deer densities which affect existing forests and associated ecosystems. Some of these deer are in forested areas available for hunting, while others are utilizing the constructed area of BNL and would not necessarily be available to hunt resulting in continued impacts to forests immediately adjacent to the constructed area of BNL.	Recent approved projects under construction have resulted in approximately 215 acres of habitat being cleared or isolated from deer use, resulting in a slight increase in deer densities which affect existing forests and associated ecosystems. Since the entire BNL site could be managed under IWDM techniques impacts from recently increased deer densities could be reduced through lowered populations. Implementation of IWDM would reduce potential impacts of additional clearing should it occur for future projects.

3.0 Purpose and Need

White-tailed deer (*Odocoileus virginianus*) are an over abundant wildlife species on the (BNL) site. This has resulted in multiple car-deer accidents; several human-deer accidents (one with significant human injury); damage to vegetation; and as in other locations in the northeastern United States is responsible for significant ecological impairments including impacts to ground nesting birds, effects on small mammal populations, threatened and endangered species, potential loss of rare plants, and reduced forest regeneration. Therefore BNL proposes to manage the white-tailed deer population in order to achieve population levels supportive of ecosystem health and improve human health and safety.

The Proposed Action would result in management of the White-tailed deer (*Odocoileus virginianus*) onsite at BNL. Based on recent population estimates, the population of white-tailed deer onsite has fluctuated from an approximate 700 deer in 1992 to an estimated 1,200 individuals in 2001, with the current population estimated in 2012 (last accurate assessment) at 630. The IWMD program would serve to lower, then maintain the deer herd on the 5,265 acre BNL site to levels protective of the ecosystem (estimated to be between 80 and 250 animals), improving deer health and ensuring the health and safety of BNL employees, using one or more methods for population control as outlined in the USDA-WS EA.

4.0 Alternatives

4.1 No Action Alternative

Under the No Action Alternative, BNL would continue allowing deer to exist at BNL without any management. Their population would continue to fluctuate with the availability of food. Deer – vehicle accidents would continue to occur and fluctuate with the varying population levels. Damage to landscape plantings, ecosystem impacts, poor deer health, and human health issues would continue to occur. All impacts identified within the US FWS EA for Wertheim NWR would continue to occur.

4.2 Hunting Alternative

Under the hunting alternative, BNL would adopt a similar approach to that described in the US FWS EA for Wertheim NWR. BNL would establish a hunting program to allow approved individuals the opportunity to hunt deer on designated areas of BNL during the regular October through January deer seasons. Specific protocols would be developed for selecting and approving individuals; designating areas open for hunting; assigning areas to individual hunters; determining number of antlerless deer to be taken prior to allowing the taking of an antlered deer (Earn-a-Buck program); tracking the number of animals taken;

and determining the effectiveness of the hunting program at controlling the deer population.

4.3 Integrated Wildlife Damage Management (Preferred Alternative)

Under the IWDM alternative, BNL would adopt the management approach discussed and evaluated within the USDA-WS EA. This approach would allow BNL to continue to assess the damage to property and the ecosystem, and utilize one or more approaches to managing deer. Where applicable, damage may be managed through use of deer resistant plantings and, when and where necessary, population reduction would be initiated using the best methods for that reduction. Initial reduction of the deer population would likely utilize the services of USDA-WS professionals to rapidly bring the population to a sustainable level. As effectiveness of population control is documented, the IWDM approach and adaptive management principles may warrant changing to a hunting program to maintain a lower population in areas suitable for hunting, while utilizing USDA-WS personnel to maintain lower population levels within the constructed portions of BNL. The IWDM approach is the most flexible and allows for the inclusion of new approaches as they are developed and reviewed.

5.0 Affected Environment and Environmental Impacts

The BNL site encompasses a total of 5,265 acres (2,131 hectares) with most principal facilities located near its central developed area, which occupies approximately 1,656 acres (670 hectares). The balance 3,609 acres (1,460 hectares) of the site are largely wooded and are part of the Long Island Pine Barrens (Pine Barrens). The central portion of the BNL site is within the Compatible Growth Area as designated by the Central Pine Barrens Joint Planning and Policy Commission (Pine Barrens Commission), while the areas outside the central portions of the Laboratory are designated as Core Preservation Area by the Commission. The Pine Barrens were established under New York State Environmental Conservation Law Article 57 (NYS ECL 57). This law serves to protect the below surface sole source aquifer by protecting the ecosystems found on the land surface. BNL, as a federal enclave, is not bound by NY State Environmental Conservation Law Article 57 establishing the Central Pine Barrens; however, the U.S. Department of Energy (DOE) works within the spirit of the law whenever possible to protect both the ecosystem and groundwater found on the BNL site.

BNL has a comprehensive understanding of the various ecological resources present on-site through multiple efforts including an extensive biological investigation conducted in the 1990s called the Site Wide Biological Inventory (Lawler, et.al, 1995); the establishment of a Wildlife Management Plan in 1999 (BNL, 1999); the Natural Resource Management Plan established in 2003 and updated in 2011 (BNL, 2011); the establishment of the Upton Ecological & Research Reserve (Upton Reserve) in 2000; and the subsequent studies conducted under both the Upton Reserve and Natural Resources Program as well as volunteer work conducted by the not-for-profit Foundation for Ecological Research in the Northeast (FERN).

Historically, hunting was allowed on BNL until the mid-1980s. Hunting occurred on the eastern portions of the property under cooperative agreements with the New York State Department of Environmental Conservation (NYSDEC). BNL terminated the agreement out of concern for personnel safety in the mid-1980s. Poaching of white-tailed deer is known to occur on the northern, eastern, and southern portions of BNL as evidenced by the occasional documentation of hunter trespass and hunter tree stands in these areas. The amount of poaching has not resulted in a significant reduction in the deer population in these areas.

Regardless of hunting pressure, either inside BNL or in surrounding areas, white-tailed deer populations have been increasing while hunter harvest has been maintained at between 2000 and 2900 animals taken annually in Suffolk County based on records kept by the NYSDEC.
Descriptions of the various ecological functions and impacts of high deer populations on the ecosystems on Long Island were addressed within the USFWS EA for the Wertheim NWR and reflect the impacts that have been documented at BNL.

5.1 Ecology

5.1.1 Effects of the No Action Alternative

The effects of No Action were analyzed in the USFWS EA for Wertheim NWR and would be essentially the same for the BNL site if no effective deer management is established. These include continued impacts on deer health, degrading forested habitats due to over browsing including lack of forest regeneration, loss of woody understory, and impacts to ground nesting songbirds and small mammals. Other effects from the No Action alternative would be negative impacts on landscape plantings, continued or increased car-deer accidents, and the potential for future human-deer accidents.

5.1.2 Effects of the Hunting Alternative

The effects of this alternative were also analyzed in the USFWS EA for Wertheim NWR and would be similar to those described in that document. However, because of the size of the BNL property, the density of the deer population (77/sq.mi.), and the location of the densest pockets of deer (within the constructed area of BNL), it would likely require a longer period of time to recover as deer would have to be drawn out of the central developed portions of BNL to be removed through hunting. Since deer population levels are high, 630 at present, effective reduction would require hunters to take 150 or more deer in the first several years to be effective. Because hunting would take longer to reduce the deer population, damage to landscape plantings and deer/vehicle accidents within the developed portions of BNL would continue without much change due to the inability of this method to control the population within the core area of BNL in a short amount of time. Difficulty in removing deer with hunting would also allow the impacts of deer to continue similar

to that of the no action alternative. Improvements, if seen, may take many years provided hunting could remove a substantial number of animals each year (greater than reproductive rate).

5.1.3 Effects of the Preferred Alternative

The effect of using IWDM was assessed within the USDA-WS EA. IWDM utilizes multiple approaches to manage deer and impacts from deer. Using one or more of the approaches of IWDM would result in a more rapid decrease in the deer population resulting in faster recovery of ecological components, decreased damage to landscape plantings, and potentially fewer car-deer incidents.

5.2 Identical Effects of All Alternatives

Because deer management is dissimilar to developmental projects that undergo NEPA review, use of any of the alternatives related to deer management would not have effects on water, air, cultural resources, transportation (other than car-deer collisions), climate, noise, visual quality, industrial safety and occupational health, natural hazards, utilities, electric and magnetic fields, waste management and pollution prevention, commitment of resources, demography, or socioeconomic factors.

5.3 Land Use, Radiology, and Environmental Justice

5.3.1 Effects of the No Action Alternative

There would be no effects associated with this alternative as no changes to the current land use, demography of the area surrounding the BNL or environmental justice issues would occur.

5.3.2 Effects of the Hunting Alternative

The hunting alternative would result in seasonal limited use of areas of the BNL that would be open to hunting. Limitations would be necessary to ensure appropriate opportunities for hunters to acquire deer and to minimize or eliminate chances of hunting related accidents. Hunting areas would most likely be closed to general access during hunting periods and access would be allowed only to hunters and limited personnel. There would be no impacts to the local demography surrounding BNL. Hunters would be encouraged to participate in the "Hunters for the Hungry" programs available in the local area providing additional protein for food pantries and soup kitchens. Because deer on and near BNL are known to contain Cs-137 (a radionuclide) (NYSDOH 1999), meat designated for donation would be tested by BNL and determined to be safe for consumption prior to being released.

5.3.3 Effects of the Preferred Alternative

The IWDM alternative would result in periods of limited use of various areas depending on the method of management being employed at any given time. Should hunting be used, then the limited use would be similar to that of the hunting alternative. If culling of the population were to be used it would result in short periods of time after work day hours when areas would become off limits while operations were taking place. In all instances the impacts to land access would be coordinated with appropriate individuals to minimize impacts.

The use of IWDM may result in significant seasonal donations of meat to local food pantries or soup kitchens. One method of control under IWDM is to rapidly reduce the deer population through annual culls and BNL would use programs like "Hunters for the Hungry" to utilize the meat. Deer taken through a cull would be butchered, tested for Cs-137 content, and if safe, donated to kitchens or pantries.

5.4 Intentional Destructive Acts

Due to the nature of deer management and varying view points of the general public toward deer management, there may be an increased chance of individuals or groups to conduct intentional destructive acts. In some instances where deer management has been implemented individuals and groups have picketed, disrupted hunts, or in extreme cases damaged or destroyed property.

5.4.1 Effects on the No Action Alternative

Intentional destructive acts would be unlikely to occur under the no action alternative as BNL would continue to operate without any deer management.

5.4.2 Effects on the Hunting Alternative

Under the hunting alternative BNL could expect protesters to picket at the front gate. Protests have occurred at the Calverton Enterprise Park in the early 2000s when hunting was started, and Wertheim NWR was picketed for a short time when hunting started in 2005.

5.4.3 Effects on the Preferred Alternative

Under this alternative, the range of potential action could be from no impact, to extreme acts against individuals and/or property. When the village of Lloyd Harbor implemented deer management (cull) in the early 2000s individuals targeted the mayor and damaged his personal property. This type of destructive act could be taken against one or more individuals and/or BNL. It would likely be minimized at BNL due to the

presence of BNL's Protective Services. Acts against individuals and property outside of the BNL would be reported to local authorities.

5.5 Cumulative Effects

Various projects over the past six years including the construction of the National Synchrotron Light Source II, Long Island Solar Farm, and upgrades to the Sewage Treatment Plant have or will result in the clearing or isolation from deer of approximately 215 acres of suitable deer habitat. This has or will result in displacement of around 60 deer into remaining habitat resulting in slight increase in deer densities. Overall deer populations are estimated based on the total lab area available for use. This slight increase in deer density has varying impacts under each of the alternatives.

5.5.1 Cumulative Effects of No Action

Under the No Action alternative increased deer densities would have a greater impact on existing habitat and ecosystems from added browsing. Increased density would result in slightly greater impacts on small mammal population, migratory bird populations (especially ground nesting birds), and forest regeneration. Any additional clearing that may occur in the future would increase deer densities that would not only increase impacts to the local ecosystem, but increase impacts to the human environment where more car-deer and or human-deer accidents could occur.

5.5.2 Cumulative Effects of the Hunting Alternative

Under the Hunting Alternative increased deer densities from loss of habitat would likely continue to affect the forest ecosystems and associated wildlife populations near the constructed area of BNL. This would primarily be a result due to the difficulty of coaxing deer from the constructed area to the forested areas of BNL where they could effectively be hunted. Clearing for new construction in the future will likely exacerbate impacts from deer due to increased densities. Increased deer densities in the constructed portion of BNL, as in the No Action alternative, may result in increased car-deer and/or human-deer accidents could occur.

5.5.3 Cumulative Effects of the Preferred Alternative

Cumulative effects of recent clearing and/or future clearing would likely be negligible under the IWDM alternative as this alternative allows the flexibility to rapidly reduce deer densities within both the constructed and un-developed portions of BNL.

6.0 Acronyms, Initials, and Abbreviations

APHIS	Animal Plant Health Inspection Service
BNL	Brookhaven National Laboratory
Cs-137	Cesium 137 (a radionuclide)
DOE	Department of Energy
EA	Environmental Assessment
ECL	Environmental Conservation Law
FWS	Fish and Wildlife Service
IWDM	Integrated Wildlife Damage Management
NEPA	National Environmental Policy Act
NWR	National Wildlife Refuge
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
US	United States
USDA	United States Department of Agriculture
WS	Wildlife Services

7.0 List of Agencies Contacted and Presentations to Stakeholders

7.1 Agencies Contacted

New York State Department of Environmental Conservation

7.2 Stakeholder Presentations

Deer Management EA presented to the BNL Community Advisory Council (January 2013) and Brookhaven Executive Round Table (February 2013).

8.0 References

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