

Bombay Hook NWR

BOMBAY HOOK NATIONAL WILDLIFE REFUGE
SMYRNA, DELAWARE

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Submitted: Curtis Daly

Approved: _____

/Date: _____

Reviewed: _____

I. INTRODUCTION**A. Objectives**

Bombay Hook National Wildlife Refuge was established in 1937 under the authority of the Migratory Bird Conservation Act as a refuge for migratory and wintering waterfowl. A diversity of habitats are maintained or developed to provide a maximum variety of native plants and animals for public use, understanding and enjoyment. This document sets forth a plan for public hunting on the refuge as a form of wildlife-oriented recreation and in some cases as a wildlife management tool.

B. Physical Features

Bombay Hook is located within Kent County along the western shore of the Delaware Bay. It is within two hours driving time of metropolitan Baltimore, Washington, Wilmington, and Philadelphia, and is less than 10 miles from the State Capital of Dover (population 28,637) and 8 air miles from Smyrna (population 5,350). The surrounding area is characterized primarily by agricultural lands on which corn, soybeans, and wheat are the principal cash crops. The refuge currently comprises 15,978 acres, three quarters of which are a broad expanse of brackish tidal marsh, mud flats and tidal creeks and rivers. Other portions of the refuge include 1,100 acres of agricultural lands, four freshwater impoundments comprising 1,100 acres, several small moist soil management units, and the remainder wooded upland and brush. The topography is very flat with almost all of the refuge lying below the 10 foot MSL contour.

The rivers and adjacent marshes are influenced by an average tidal amplitude of 5.5 feet. Upland soils are in the Matapeake-Othello soil association which vary from well drained to poorly drained. The refuge has a mild climate with an average annual rainfall of 42 inches. Precipitation is fairly evenly distributed throughout the year with an average snowfall of 15 inches. The marshes are generally frozen for less than two months each year.

C. Wildlife**1. Birds**

Waterfowl are the most conspicuous forms of wildlife on the refuge, particularly during periods of migration and during winter. Numbers of Canada geese

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peak at 8-10,000 birds during late October or early November, while snow geese peak at 40-50,000 in November. Ducks generally peak at 30,000 birds in October or November. Over 20 species of ducks use the refuge annually with five species commonly nesting here. The refuge salt marsh, bayshore, and impoundments host thousands of shorebirds during migration (May-June). Species present in greatest abundance include semi-palmated sandpipers, dunlins, ruddy turnstones, dowitchers, knots, and black-bellied plovers. Species such as snowy, cattle, and great egrets, great blue herons, black-crowned night-herons and little blue herons comprise the wading birds most commonly seen during the summer.

Management activities for water birds include water level manipulation in impoundments as well as planting and maintenance of green browse, nest cover, and food plots. Other activities include placement of nesting structures for wood ducks, prescribed burning, moist soil management and protection through law enforcement activities.

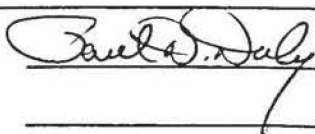
2. Endangered Species

Bald Eagles and peregrine falcons are both frequent refuge visitors. A resident pair of eagles normally nests in the woods adjacent to Shearness Pool. A peregrine falcon nesting tower was erected along the Leipsic River during 1984. Two platforms are also maintained with the hope they will attract nesting ospreys, a species which has not nested on the refuge in recent years.

3. Mammals

Bombay Hook is home to approximately 34 species of mammals. The muskrat is the most readily apparent species with an estimated population range of 5,000,-7,000. White-tailed deer are the largest species present and total about 300 animals. Other more common species and estimated populations include:

| | |
|-------------------|-----|
| Raccoon | 400 |
| Opossum | 150 |
| Red Fox | 25 |
| Gray Squirrel | 100 |
| Cottontail Rabbit | 500 |
| Woodchuck | 300 |
| Striped Skunk | 50 |



4. Reptiles and Amphibians

Thirty-five species of reptiles and amphibians are known to inhabit the refuge. Although many of these species benefit from refuge management practices, such activities are not geared toward improving habitat specifically for these animals.

II. CONFORMANCE WITH STATUTORY AUTHORITIES

The Refuge Recreation Act of 1962 (16 U.S.C. 460K) authorizes the Secretary of the Interior to administer refuges for public recreation as an appropriate incidental or secondary use only to the extent that it is practicable and not inconsistent with the primary objectives for which the area was established. In addition, the Refuge Recreation Act requires (1) that any recreational use permitted will not interfere with the primary purpose for which the area was established; and (2) that funds are available for the development, operation, and maintenance of the permitted forms of recreation. Waterfowl hunting, deer hunting, and small game hunting are authorized by these regulations and will not interfere with the primary purposes for which Bombay Hook National Wildlife Refuge was established. Since national wildlife refuges are established primarily to safeguard wildlife populations and their habitats and were never intended to be sanctuaries for individual animals, the use of hunting as a management tool would be in keeping with refuge purposes to conserve wildlife populations and habitats. Hunting will utilize a renewable natural resource, and will provide additional wildlife-oriented recreational opportunity to the public. Funds are available for the administration of the recreational activities permitted by these regulations. Costs for hunt administration are outlined in section V-6 of this plan. An estimated 2,200-2,500 hunter visits will be realized annually.

III. STATEMENT OF OBJECTIVES

The refuge objectives include the following:

1. To provide optimum resting and feeding habitat for migratory birds, primarily wintering waterfowl.
2. To provide quality nesting and brooding habitat for ducks, primarily wood ducks, blacks, mallards, gadwall and blue-winged teal.
3. To provide habitat and protection for the endangered bald eagle and peregrine falcon.

4. To provide quality interpretive and wildlife-oriented recreational opportunities for refuge visitors compatible with wildlife management objectives.
5. To provide sites and opportunities for environmental education.

The basic objectives of protecting and preserving the migratory waterfowl resource are reached through preservation of marsh areas as well as intensive management practices such as: water level manipulation, croplands management and prescribed burning. These practices serve to enhance the area for waterfowl as well as other wildlife. Recreational objectives include the provision of wildlife-oriented recreational opportunities compatible with habitat and wildlife objectives. Consumptive recreation in the forms of waterfowl, other migratory birds, deer and small game hunting forms a significant portion of the refuge recreational program. Enforcement of existing laws and regulations serves as an additional method by which the wildlife resource is preserved and protected. The objectives of the hunting program are to provide high quality wildlife oriented consumptive recreation to the public as well as to function as a management tool to control the size and distribution of particular animal populations. Conduct of the hunt programs described herein will not interfere with the attainment of other refuge objectives.

IV. ASSESSMENT

Refuge population levels of all hunted species will be adequate to provide high quality non-consumptive recreational opportunities to the public (e.g. bird watching, photography environmental education etc.) as well as sufficient opportunities for legal harvest.

Specific objectives for major species or species groups and the relationship of the program to these objectives are presented below:

Waterfowl - Canada Geese

The goal of Canada goose management on the refuge is to maintain quality habitat sufficient to sustain up to 2 million use-days per year. Populations of Canada geese on the entire Delmarva Peninsula have declined steadily over the past several years; with the exception of the 1993-94 winter when populations increased slightly.

Submitted: Paula Daly Approved: _____ /Date: _____
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Refuge use days for calendar years 1989-93 are as follows:

Canada Goose Use Days

| <u>Year</u> | <u># of Use Days</u> |
|-------------|----------------------|
| CY89 | 608,087 |
| CY90 | 550,900 |
| CY91 | 625,487 |
| CY92 | 518,233 |
| CY93 | 651,484 |

The major cash crops grown in the vicinity of the refuge and in the rest of Kent County are corn, soybeans and winter wheat. Hunting on private lands is generally restricted to owners, guests, and lessees. Given these local cropping practices and sustained hunting pressure there is abundant food and feeding opportunity for a large goose population in the fall and winter. Refuge farming practices and the West Waterfowl Area goose hunting program will have only a minor effect on the migration and wintering habitats of this species.

Canada geese use the salt marsh and the fresh-water impoundments primarily for resting, and feed in the croplands both on and off the refuge. A maximum of three half-days of hunting per week on the croplands of the West Waterfowl Hunting Area and periodic hunting within the snow goose area will not seriously disrupt the daily feeding flight patterns out of the refuge.

Waterfowl - Snow Geese

Beginning in 1981 snow goose use at Bombay Hook showed a dramatic increase. Formerly, these birds reached a peak of 5-6,000 and maintained that population level for only a week or two. However, during the period 1981-90 population peaks regularly exceeded 50,000. Furthermore, use days throughout the year increased to such an extent that snow goose use has exceeded that use by Canada geese for every year since 1982.

Snow goose use at Bombay Hook was formerly (pre-1981) confined to fringes of the Bay Shore, small areas within the salt marsh and within Raymond Pool. As the population expanded the birds tended to concentrate within the Money Marsh-Leatherberry Flats and George's Island portions of the refuge salt marsh where they normally spend the night. During the day large flocks fly out and feed in upland fields, (some up to 50 miles from the refuge) and then many return to the refuge to roost. Large enough numbers stay behind or feed at night so that approximately 1,000 acres of

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Spartina alterniflora marsh are denuded annually. In an effort to restrict marsh degradation, hunting has been permitted since 1983 over the 2,000 acres in which the snow geese regularly feed. In addition, a "Bombay Hook only" season has been held since 1987, either prior to the regular State season or during the normally closed statewide deer season in early November. The goal of snow goose management is to maintain the salt marsh habitat in such a manner that significant acreages of marsh grass are not converted to open water while still supporting an optimum fall, winter, and spring population of snow geese. Dispersal of the birds through hunting activities appears to be successful in that quality salt marsh is being maintained. The snow goose peak was down to 40,000 birds in 1991 and, more importantly, the denuded marsh area was down to 519 acres. This occurred during a year when overall populations in the general vicinity were at record peaks.

Snow Goose Use Days (Millions)

| <u>Year</u> | <u># of Use Days</u> |
|-------------|----------------------|
| CY88 | 7.1 |
| CY89 | 4.9 |
| CY90 | 6.7 |
| CY91 | 5.5 |

Waterfowl - Ducks

The goal of duck management is to maintain the non-resident duck population at the 1965-69 level during the fall migration, wintering and spring migration periods. Special emphasis and efforts are directed at protecting and benefiting the black duck with the aim of reversing this species' decline.

Duck Use Days (Millions), 1965-69 Average

| <u>Fall</u> | <u>Winter</u> | <u>Spring</u> | <u>Total</u> |
|-------------|---------------|---------------|--------------|
| 1.4 | 0.8 | 0.4 | 2.6 |

Duck Actual Use Days (Millions)

| <u>Year</u> | <u>Use Days</u> |
|-------------|-----------------|
| CY89 | 1.6 |
| CY90 | 2.0 |
| CY91 | 1.8 |
| CY92 | 2.4 |
| CY93 | 2.6 |

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The major duck species using the refuge are the black duck, mallard, pintail, and green-winged teal. The mallard and black duck are abundant in the fall and in the winter, particularly during years when cold temperatures freeze marshes and open water to the north of Delaware. The pintail and green-winged teal are abundant in the fall with populations decreasing in the winter. All four species use the salt marsh and fresh-water impoundments for feeding and resting and make occasional feeding flights to surrounding croplands. The mallard, the black duck and the green-winged teal normally are the top three duck species in the hunter's bag on the South Waterfowl Hunting Area.

Sufficient salt marsh habitat is available on the refuge to permit hunting on that portion designated as the South Waterfowl Hunting Area without major adverse effect on the attainment of refuge duck use objectives. This portion of the marsh is of lesser importance for ducks because of the scarcity of ponds and potholes, relatively narrow width, higher elevation, and proximity to a small fishing industry at Port Mahon.

The croplands in the West Waterfowl Area are not a major area of duck use and waterfowl hunting there will have little effect on duck use objectives. It is primarily a goose hunting area and few ducks are harvested.

The Young Waterfowlers Hunting Area is excellent habitat, but since hunting will be on selected Saturday mornings only, there will be no major effect on duck use objectives.

No duck hunting is permitted within the Snow Goose Hunting Area.

White-tailed Deer

The hunt program management objective is to maintain a healthy herd in balance with the available habitat. Over-harvest of deer will not occur, because the number of hunters on the Regular Deer Hunting Area, Fischer Tract, Steamboat Landing Area and the Headquarters Area are restricted and unhunted refuge areas provide a sanctuary.

Under harvest is in actuality a more likely scenario. The refuge herd has shown a slight but fairly steady increase over the past several years. A record harvest of 126 deer took place during the 1992-93 season. Increased deer activity has been noted primarily on the Regular Hunt Area/Fischer Tract and in the "eagle woods" section of the Headquarters Hunt Area. Deer have remained healthy, however,

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with no decrease in weights by age class from animals checked at the official station on the refuge. Many increases in the efficiency of refuge deer hunts through increasing harvest have been made in recent years. They include the requirement to hunt from specific stands (elevated platforms) and the requirement that at least one deer taken (out of a season limit of two) be antlerless.

Deer hunts also have an important wildlife-oriented recreation component. For this reason we permit a limited amount of archery deer hunting on the Regular Hunt/Fischer Tract Area and the Steamboat Landing Area. Very few deer are taken here by bowhunters, but provision of the opportunity satisfies a significant demand.

Upland Game Birds

The bobwhite quail, ring-necked pheasant, and mourning dove will be managed for maximum natural populations consistent with the attainment of refuge waterfowl objectives. Hunting will be permitted only where refuge overall waterfowl use is not adversely affected as a result of upland gamebird hunting programs. These conditions are satisfied on the designated South Upland Hunting Area.

Small Game Mammals

Healthy natural populations of all species in balance with their habitats is the management goal. The cottontail rabbit and the gray squirrel are the major species sought by hunters. Hunting of these and other species on the South Upland Hunting Area will not affect waterfowl objectives or conflict with the waterfowl hunting programs for which there is a greater demand.

Snapping Turtles

The objective is to maintain a healthy, balanced population of snapping turtles while ameliorating predation on waterfowl. Snapping turtles are classified as a game animal by the State of Delaware. A hunting license is required to take turtles with fike nets or traps. The taking of turtles may be permitted within the refuge impoundments. Refuge special use permits are required.

V. DESCRIPTION OF HUNTING PROGRAM

Bombay Hook offers a wide diversity of hunting opportunity. Programs will include big game (white-tailed deer), upland game birds, small game, waterfowl and other migratory game

Submitted: *Paul D. Daly* Approved: _____ /Date: _____
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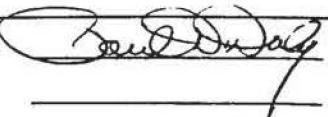
birds. Under State law, trapping of snapping turtles is also placed in the hunting category and will also be included in this plan. All refuge hunting programs will be in accordance with applicable State and Federal Regulations. Hunting will be within the frame work established by the State for each species. Waterfowl and deer hunts will be controlled programs requiring permits; while other hunts will not require permits. Permits are required for waterfowl and deer hunting because demand for these hunts exceeds supply, and use of permits allows us to equally distribute hunt opportunities to the public and provides accurate information as to hunter success. Permits will also be required for trapping of snapping turtles.

The following areas are designated as open to public hunting:

| <u>Area</u> | <u>Species</u> | <u>Acres</u> | <u>% of Refuge</u> |
|---|---|--------------|------------------------|
| West Waterfowl Hunting Area | Waterfowl (principally Canada geese) | 743 | 4.9 |
| South Waterfowl Hunting Area | Waterfowl (principally ducks) | 2,123 | 14.0 |
| Regular Deer Hunting Area | White-tail Deer | 1,045 | 6.9 |
| Fischer-Tract Deer Hunting Area | White-tail Deer | 240 | 1.6 |
| Headquarters Hunting Area/Fischer Tract | White-tail Deer | 975 | 6.4 |
| Steamboat Landing Hunting Area | White-tail Deer | 856 | 5.4 |
| South Upland Hunting Area | White-tail Deer, All resident game birds & mammals & all migratory game birds. | 551 | 3.6 |
| Snow Goose Area | Waterfowl (snow geese only) | 2,000 | 13.2 |

In addition to the area open to public waterfowl hunting, a 550 acre area will be used for a Young Waterfowlers Training Program.

A total of 3,656 acres (22.9%) of the refuge will be open to

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the hunting of resident game species principally deer.

Hunting of waterfowl and other migratory game birds will be permitted on 5,417 acres (33.9%) of the refuge.

A presidential proclamation dated October 7, 1950 and modified on July 8, 1963 closed 1,170 acres of tidal waters to the hunting of migratory birds.

A. Waterfowl

Waterfowl hunting will be permitted on five areas:

1. West Waterfowl Hunting Area
2. South Waterfowl Hunting Area
3. South Upland Hunting Area
4. Snow Goose Hunting Area
5. Young Waterfowlers Hunting Area

Daily permits are required for all areas except the South Upland Hunting Area where no permit is required. West Waterfowl Area permits are obtained by daily issuance of a permit following a pre-season public lottery for advance registration. Daily lotteries are also held to fill vacancies left by "no-shows" who held advance reservations.

Permits for the South Waterfowl Hunting Area and Snow Goose Hunting Area are issued daily via a lottery system.

The Young Waterfowlers Area is used by 12 to 18 year old youths enrolled in the Young Waterfowlers Training Program. Hunting is conducted within the framework of Federal and State regulations. The selection of participants is by public drawing if applications exceed the availability of hunting sites. Each applicant must submit evidence of successful completion of the training program. Hunting days for the Young Waterfowlers are Saturdays (except for Christmas Day) as arranged with the refuge manager.

Blinds are available for non-ambulatory waterfowl hunters who receive advance reservations for up to 3 hunt days during the season. Hunt reservations are assigned via a pre-season lottery. To qualify for the non-ambulatory hunt, permittees must be certified "wheelchair bound" by a physician. Up to three ambulatory individuals may accompany the permittee in the blind, but only one can participate in the hunt.

Waterfowl hunting is restricted to government constructed blinds on all areas except the South Upland Hunting Area and the Snow Goose Hunting Area where no blinds are provided.

B. Other Migratory Game Birds

Hunting of other migratory game birds will be permitted in the South Upland Hunting Area during their respective open seasons. Permits will not be required.

C. Big Game - White-tailed Deer

Permits will be required for all deer hunting (except on the South Upland Area) for the purpose of limiting the total number of hunters each day and to insure that appropriate information is dispensed to them.

1. Archery

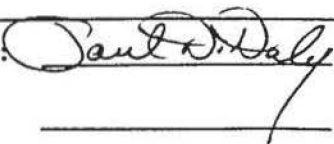
Hunting will be permitted on the Regular Deer Hunt Area, Fischer Area, Steamboat Landing Area and the South Upland Hunting Area. Permits for the Regular Area are obtained by a daily lottery. The Regular Deer Hunt Area is open only on the first two Saturdays of the State season. The Fischer and Steamboat Landing Areas will be open during all weekdays in October when the State bow season is open. Check-in will be on a self-serve basis with six permits per day available at the Fischer gate and 20 permits available at Steamboat Landing gate. The South Upland Area will be open during the regular State archery season.

2. Muzzleloader

Hunting will be permitted on the Regular/Fischer Tract Deer Hunt Area and the South Upland Hunting Area. Daily permits are required except on the South Upland area. Permits are obtained by a pre-season lottery for advance reservations. A daily lottery is also held to fill vacancies by "no-shows" on the day of the hunt. The Regular/Fischer Tract Area is open only during selected days of the October Delaware season.

3. Shotgun

Hunting will be permitted on the Regular/Fischer Tract Deer Hunt Area, the Steamboat Landing Area, the Headquarters, and the South Upland Hunting Area. Daily permits are required except on the South Upland Area. Permits are obtained by a pre-season lottery for advance



reservations. A daily lottery is also held to fill vacancies by "no-shows" on the day of the hunt. The Regular Area, Fischer Tract, Steamboat Landing Area and the Headquarters Area are open during selected days of the Delaware deer season. These days may vary from year to year and are outlined in the annual hunt program.

The Headquarters and the Regular Deer Hunt Areas are also open for hunters who are non-ambulatory during the regular hunt days. To qualify for the non-ambulatory hunt permittees must be certified "wheelchair bound" by a physician. Each non-ambulatory hunter is required to have an ambulatory assistant who is not permitted to fire a gun.

D. Upland Game Birds and Small Game

Hunting of upland game birds and small game will be permitted on the South Upland Hunting Area within the framework of State law, between September 1 and February 28 (29). No permit is required.

E. Snapping Turtles

Trapping of snapping turtles will be permitted in refuge impoundments and tidal waters in accordance with the State regulations and seasons. Permits will be required to provide information on trapping success.

VI. FACILITIES REQUIRED

A. Deer Hunting

Deer stands are provided in the Regular/Fischer Tract Hunt Area, the Steamboat Landing Area and the Headquarters Area. In the past the State Division of Fish and Wildlife has helped defray some of the costs for materials for these structures. The Visitor Center is utilized as a daily check-in site where permits are issued, with the exception of bow hunting on the Fischer Tract and Steamboat Landing, where permits are issued on a self-serve basis from a box at the tract entrances. Numerous directional and informational signs are required for the administration of this hunt.

B. Waterfowl

Eleven portable wood frame blinds are utilized with the West Waterfowl Area Hunts, and twenty stationary wood frame blinds are needed for the South Waterfowl Area hunts. Up to ten blinds are needed on the Young

Waterfowl Hunting Area. One blind specially constructed to accommodate wheelchairs is also available. Blinds must be serviced and grassed annually. The Visitor Center serves as the check station for all waterfowl hunts except the South Waterfowl Area. There hunters register for a daily lottery at the State waterfowl hunt check station south of Little Creek. Boats equipped with outboard motors are necessary for hauling personnel and materials to the blind sites on the South Waterfowl Hunting Area for maintenance. As is true for the deer hunt numerous directional and informational signs are required for the administration of the waterfowl hunts.

C. Other Migratory Game Birds, Upland Game and Small Game

No specific facilities other than sign posting will be required.

VII. MEASURES TAKEN TO AVOID CONFLICTS WITH OTHER MANAGEMENT OBJECTIVES

A section 7 consultation has been prepared for hunting programs and how they relate to the use of the refuge by bald eagles and peregrine falcons. There are no apparent conflicts.

Damage or destruction of vegetation including construction of permanent tree stands or nailed platforms is prohibited.

Hunting on the West Waterfowl Area is restricted to half days (mornings). The number of days per week is usually 2 or 3. Actual schedules are determined each year after review of the refuge Canada goose numbers for the previous year and discussions with the State Division of Fish and Wildlife. The hunt schedule is outlined in the annual hunt program each year. The Young Waterfowlers Area is available for two Saturday mornings as arranged with the refuge manager. This keeps the disturbance to resting waterfowl, other wildlife, and other refuge visitors to a minimum.

The South Waterfowl Hunting Area includes marshland which, compared to most refuge marsh, is of lesser importance for ducks and comprises a relatively small percentage of Bombay Hook's quality duck habitat.

Tours of duty for refuge personnel administering the hunts are staggered as much as possible to reduce excessive overtime costs.

Refuge hunting seasons have been limited to September 1 through February 28 (29) to reduce impacts on wildlife populations and to reduce disturbance during the nesting season. Hunting hours are generally restricted to one-half hour before sunrise to one-half hour after sunset (migratory bird hunting stops at sunset except on the West Waterfowl Area and Young Waterfowlers Area where it stops at noon) to further reduce disturbance. This action effectively closes the refuge to raccoon hunting (sunset to sunrise), and restricts hunting of woodchuck (no closed season) and crows (June 26-March 21) to September 1 through February 28 (29).

Hunts are scheduled on the different areas so that a portion of the tour route is always open to the general public.

Consultation and coordination meetings are held annually with the Delaware Division of Fish and Wildlife to gain their input into our proposed hunt program and to ensure that the mutual concerns of our two agencies are fully considered during planning.

Law Enforcement needs and procedures associated with the hunting program are described in the Refuge's approved Law Enforcement Management Plan.

VIII. COSTS

Annual costs for the hunting program are:

| <u>Item</u> | <u>Staff Days</u> | <u>Cost</u> |
|---|-------------------|------------------|
| Hunt Planning | 8 | \$ 800. |
| News Release Preparation | 3 | 300. |
| Inquiries | 18 | 1,800. |
| Processing Applications | 8 | 800. |
| Administration of Hunts (Check Stations, etc.) | 44 | 4,400. |
| Printing Costs of Handouts | - | 1,000. |
| Enforcement | 20 | 2,000. |
| Posting Signs | 2 | 200. |
| Road Maintenance (including materials) | 4 | 900. |
| Parking Area Maintenance (including materials) | 1 | 400. |
| Stand Maintenance (including materials) | 4 | 1,500. |
| Blind Maintenance & Construction | 20 | 2,000. |
| Boat Operation & Maintenance | 2 | 700. |
| Fuels and Electricity | - | 1,200. |
| | <u>134</u> | <u>\$18,000.</u> |

Submitted: Paul D. Day

Approved: _____

/Date: _____

Reviewed: _____

IX. CONDUCT OF THE HUNT

A news release describing Bombay Hook hunting programs is sent to newspapers and radio stations throughout the State in August. The release outlines refuge hunting programs, designates application due dates and where applicable, sets dates for public lottery drawings.

Blinds on the South Waterfowl Area are permanently placed. These blinds are inspected and repaired (replaced) annually. Switchgrass is used to reed the blinds and is placed on the blinds each October. Blinds on the West Waterfowl Area are portable and are removed at the conclusion of the hunting season. They are re-positioned each fall following crop harvest. They are placed in the same general location each year unless experience dictates otherwise. They also are reeded with switchgrass cut and bundled at Bombay Hook.

Pre-season public lotteries are conducted for firearms deer hunts and the west waterfowl and non-ambulatory hunts. These are held in late September for muzzleloader and early October for other hunts. Applicants pay a \$2.00 application fee when they submit their hunt applications. Successful hunters are assigned the dates requested if available, or the first available date if the requested date is filled. Stands or blinds are assigned in numerical order as picked.

Daily lotteries are conducted for the waterfowl and deer hunts to fill vacancies as a result of reservation holders not showing up. Waterfowl lotteries are conducted on a hunting party basis and deer hunt permits are individually assigned. Successfully selected parties/individuals choose from the available blinds/stands.

Bombay Hook offers the following regulated hunts open to the general public:

Deer

Headquarters Shotgun*
Regular/Fischer Tract Shotgun*
Steamboat Landing Shotgun*
Muzzleloader*
Archery

Waterfowl

West Waterfowl Area*
South Waterfowl Area
Snow Goose Area

All Game

South Upland Area

* requires advance registration

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A. General Requirements

1. Non-hunters are allowed only to accompany a permitted juvenile or non-ambulatory hunter.
2. Reservations are obtained by applying to the Refuge Manager in writing for applications. Muzzleloader applications must be postmarked prior to September 15. All other hunting applications must be postmarked prior to October 8. Archery deer, snow goose, and South Waterfowl Area hunters are not required to have advance reservations. Only one application per hunter, per hunt will be accepted.
3. Successful applicants are selected by public lottery. Failure to appear on the day of the hunt will result in forfeiture of the reservation. Forfeited reservations and permits not requiring advance reservation will be awarded to stand-by hunters by a ticket-lottery system the day of the hunt.
4. All hunters except those using the South Upland Area are required to obtain a daily permit prior to hunting.
5. The use or possession of alcoholic beverages on hunt areas during any scheduled hunt is prohibited.
6. Hunters, when requested by Federal or State enforcement officers, must display for inspection all game, hunting equipment and ammunition.

B. Deer Hunting**1. General**

- a) No nailed deer stands, platforms, ladders or blinds, other than those provided by the government are permitted. Tree stands must be portable, temporary in design and completely removed after use.
- b) All deer must be checked at the Refuge Headquarters Check Station before the hunter leaves the refuge.
- c) All firearms deer hunters must display a minimum of 400 square inches of solid hunter orange on the head, chest and back while hunting.

2. Regular Area and Fischer Tract

a. Shotgun and Primitive Firearms

- 1) Individuals selected by advance reservation must appear at Headquarters prior to one hour before legal shooting time on the day of the hunt to be issued a daily permit.
- 2) A standby ticket-lottery will be held one hour before legal shooting time, for all forfeited reservations.
- 3) Forty-seven (47) hunters will be allowed on the two areas and 47 elevated deer stands are provided. One stand on the Regular Area (#91) is reserved for non-ambulatory hunters. When not in use by the non-ambulatory this stand may be used by the ambulatory.
- 4) All hunters must use assigned stands between the hours of 1/2 hour before sunrise until 8:00 a.m. and from 4:00 p.m. until 1/2 hour after sunset. During the time between 8:00 a.m. and 4:00 p.m. hunters may leave their stand to hunt or leave the area.
- 5) Shotguns are permitted only during selected days of the Delaware deer hunt season that will be announced in advance by the Refuge Manager.
- 6) Primitive firearms are permitted only during selected days of the Delaware October muzzleloading season.
- 7) A fee of \$5.00 per hunter will be charged and collected prior to the issuance of a daily permit.

b. Archery

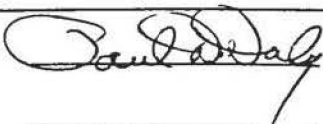
- 1) Permits are issued at Headquarters by a ticket-lottery one hour before legal shooting time for the September Saturday hunts.
- 2) Hunting is permitted on the first two Saturdays of the State season and during weekdays in October as determined by the Refuge Manager.

- 3) The weekday hunts in October will be on a first-come, first-served self check-in basis. Six permits will be available each day at the Fischer gate.
- 4) The maximum number of hunters allowed on the Regular Area is 60. The maximum number on the Fischer Area is 6.
- 5) Forty-one (41) elevated deer stands are available on the Regular Area and six (6) on the Fischer Area for use on a first-come, first-served basis. Use of stands is optional.
- 6) Hunting ends at 11:00 a.m. each day.

3. Steamboat Landing

a. Shotgun

- 1) Individuals selected by advance reservation must appear at headquarters prior to one hour before legal shooting time on the day of the hunt to be issued a daily permit.
- 2) A standby ticket-lottery will be held one hour before legal shooting time for all forfeited reservations.
- 3) 20 hunters will be allowed on the Steamboat Landing and 20 elevated stands are provided.
- 4) All hunters must use assigned stands between the hours of 1/2 hour before sunrise until 8:00 a.m. and from 4:00 p.m. until 1/2 hour after sunset. During the time between 8:00 a.m. and 4:00 p.m. hunters may leave their stand to hunt or leave the area.
- 5) Hunting is permitted only during selected days of the Delaware deer hunt seasons that will be announced in advance by the refuge manager.
- 6) A fee of \$5.00 will be charged and collected prior to the issuance of a daily permit.

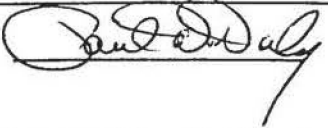


b. Archery

- 1) Archery hunting will be permitted on the Steamboat Landing Area during all weekdays in October, when the State season is open. The maximum number of hunters allowed on the area is 20. Daily permits will be issued on a self-service basis at the entrance to the Steamboat Landing Area.
- 2) Twenty elevated deer stands are available for use on a first-come, first-served basis. Use of stands as optional.
- 3) Hunting ends at 11:00 a.m. each day.

4. Headquartersa. Shotgun Only

- 1) Individuals having reservations must appear at Headquarters prior to 1 1/2 hours before legal shooting time on the day of the hunt to be issued a daily permit.
- 2) A standby ticket-lottery drawing will be held 1 1/2 hours before legal shooting time for all forfeited reservations.
- 3) Thirty-eight (38) hunters will be allowed on the Headquarters Area. A total of 32 elevated stands are located within the unit. Six sites are designed as stands for non-ambulatory hunters. All hunters must confine hunting to their assigned stand. Non-ambulatory hunters must have an assistant accompany them; however, this assistant may not possess a firearm or ammunition nor fire a weapon for any reason.
- 4) Hunting is permitted on selected days of the Delaware deer hunt season that will be announced in advance by the Refuge Manager.
- 5) Hunters may leave the hunt area after 9:00 a.m. If a hunter leaves, he may return once more during the day. He must return prior to 3:00 p.m. Departure from area prior to 9:00 a.m. or between 3:00 p.m. and 1/2 hour after sunset may result in the loss of future

Submitted: 

Approved: _____

/Date: _____

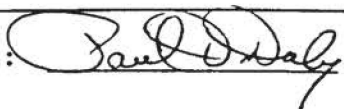
Reviewed: _____

except Christmas Day. Hunting may be canceled on any day due to extremely adverse weather conditions or freeze-up of the marsh.

- b) Permits will be issued at the Delaware Division of Fish and Wildlife check station at Little Creek by a ticket-lottery system two hours before legal shooting time. Hunters arriving after the lottery will be issued permits on a first-come, first-served basis until 1:00 p.m. Blinds will be distributed to only one hunt party per day.
- c) No more than 3 persons may occupy a blind.
- d) A boat is necessary to reach the blinds. Boats with motors are recommended.
- e) Hunters must leave the area and turn in permits prior to one hour after sunset each hunting day.
- f) A fee of \$10.00 per blind will be charged in advance of permit issuance. Changing blinds will require a separate new permit and new fee.

3. West Waterfowl Area

- a) Hunting will be on selected days during the Delaware Canada goose season. These days will be announced in advance by the Refuge Manager. Hunting times are from legal shooting time until 12:00 noon.
- b) Individuals with reservations must appear at Headquarters prior to one hour before legal shooting time on the morning of the hunt.
- c) A stand-by lottery drawing will be held one hour before legal shooting time for all forfeited reservations.
- d) No more than 4 persons may occupy a blind.
- e) Permits must be returned to the box at either Dutch Neck Gate or Fischer Gate before leaving the refuge.
- f) A fee of \$10.00 per blind will be charged and collected prior to the issuance of a daily



permit.

- g) No person may have in their possession or use, more than 15 shells.

4. Snow Goose Area

- a) Hunting will be during the Delaware goose season on days when the area is indicated open by the Refuge Manager.
- b) Permits will be issued at Refuge Headquarters one hour before legal shooting time by a ticket lottery system. Hunters arriving after the lottery will be issued permits on a first-come, first-served basis until 3:00 p.m. A maximum of 30 parties of up to 4 individuals will be permitted at any one time.
- c) No blinds are provided. Blinds must be temporary in nature, and removed at the conclusion of the day's hunt. No hunting is permitted within 300 yards of dike roads, 500 yards of Sluice Ditch, 100 yards of the Bay Shore or 500 yards of the Leipsic River.
- d) A boat is necessary to reach the hunt area.
- e) Only snow geese may be taken.
- f) The hunt area consists of 2 units; either of which or both may be open.

D. All Game Hunting

1. South Upland Hunting Area

- a) The area is open to big game, small game and waterfowl hunting in accordance with applicable State and Federal seasons.
- b) No hunting is permitted from March 1 through August 31.

E. Snapping Turtles

- 1. Permits will be issued upon request. Fike nets must be marked with the hunter's (trapper's) name.

X. APPENDIX

APPENDICES

| | |
|------------|--|
| Appendix A | West Waterfowl Hunting Area Application Card |
| Appendix B | Muzzleloader Deer Hunting Application Card |
| Appendix C | Regular Deer/Fischer Tract Hunting Area Application Card |
| Appendix D | Steamboat Landing Hunting Area Application Card |
| Appendix E | Headquarters Hunting Area Application Card |
| Appendix F | Permit for Deer Hunting - All Areas |
| Appendix G | South Waterfowl Hunting Area Permit |
| Appendix H | Snow Goose Hunting Area Permit |
| Appendix I | West Waterfowl Hunting Area Permit |
| Appendix J | Bombay Hook Public Hunting Information Leaflet |
| Appendix K | 1994-95 Annual Hunt Program |
| Appendix L | Areas of the Refuge Supporting Duck & Goose Populations |
| Appendix M | Areas of the Refuge Supporting White-tailed Deer Populations |
| Appendix N | Areas of the Refuge Supporting Small Game and Other Migratory Game Birds |

Submitted: Paul D. Duly Approved: _____ /Date: _____
Reviewed: _____

APPENDIX A

APPLICATION TO HUNT ON WEST HUNTING AREA - WATERFOWL BOMBAY HOOK NATIONAL WILDLIFE REFUGE

1. Please fill in the card below completely.
2. Address the card to yourself by printing your name and address on the reverse side.
3. Tear off the card with your name on it and place it in an envelope addressed to:

Bombay Hook National Wildlife Refuge
R.D. #1, Box 147
Smyrna, Delaware 19977-9764

Only one application may be submitted by each person. Applications must be received at Bombay Hook, or be postmarked by, October 8. Shooting days will be as specified by the Refuge Manager.

ALL APPLICANTS WILL BE NOTIFIED, AND THOSE
PERSONS SUBMITTING MORE THAN ONE APPLICATION
FOR WEST HUNTING AREA WILL BE DISQUALIFIED.

(Tear off here)

APPLICATION TO HUNT ON WEST HUNTING AREA - WATERFOWL BOMBAY HOOK NATIONAL WILDLIFE REFUGE

| | | | | |
|----------------------------------|------------|------------|---|-----|
| I prefer to hunt on these dates: | | | I will accept any other dates available. (Check) | Yes |
| 1st Choice | 2nd Choice | 3rd Choice | | No |
| | | | | |
| Date | Date | Date | Signature of Applicant | |

(Do not write in this space)

Year _____ Blind _____ has been reserved on the date indicated. Your reservation
Month _____ will be forfeited if you are not present at refuge headquarters 1 hour before
Day _____ legal shooting time on the day you plan to hunt.

Non-Transferable

APPENDIX B

APPLICATION TO HUNT ON REGULAR DEER HUNTING AREA - MUZZLELOADER BOMBAY HOOK NATIONAL WILDLIFE REFUGE

1. Please fill in the card below completely.
2. Address the card to yourself by printing your name and address on the reverse side.
3. Tear off the card with your name on it and place it in an envelope addressed to:

Bombay Hook National Wildlife Refuge
P.O. #1, Box 147
Smyrna, Delaware 19977-9764

Only one application may be submitted by each person. Applications must be received at Bombay Hook, or be postmarked by, September 15. Shooting days will be as specified by the Refuge Manager.

ALL APPLICANTS WILL BE NOTIFIED, AND THOSE PERSONS
SUBMITTING MORE THAN ONE APPLICATION FOR REGULAR
DEER HUNTING AREA - MUZZLELOADER WILL BE DISQUALIFIED.

Hunters must possess a state hunting license or be exempt from the state license requirements as a result of being over 65 years of age, permanently disabled, or if under 15 years of age may hunt when accompanied by a person who is the lawful holder of a hunting license or has a lawful right to hunt.

(Tear off here)

APPLICATION TO HUNT ON REGULAR DEER HUNTING AREA - MUZZLELOADER BOMBAY HOOK NATIONAL WILDLIFE REFUGE \$2.00 NON-REFUNDABLE APPLICATION FEE REQUIRED

| | | | | | |
|----------------------------------|------------|------------|---|--------------------------|-----|
| I prefer to hunt on these dates: | | | I will accept any other dates available. (Check) | <input type="checkbox"/> | Yes |
| 1st Choice | 2nd Choice | 3rd Choice | | <input type="checkbox"/> | No |
| | | | | | |
| Date | Date | Date | Signature of Applicant | | |

(Do not write in this space)

Year _____ Stand _____ has been reserved on the date indicated. Your reservation
Month _____ will be forfeited if you are not present at refuge headquarters 1 hour before
Day _____ legal shooting time on the day you plan to hunt.

Non-Transferable

APPENDIX C

APPLICATION TO HUNT ON REGULAR DEER HUNTING AREA - SHOTGUN BOMBAY HOOK NATIONAL WILDLIFE REFUGE

1. Please fill in the card below completely.
2. Address the card to yourself by printing your name and address on the reverse side.
3. Tear off the card with your name on it and place it in an envelope addressed to:

Bombay Hook National Wildlife Refuge
R.D. #1, Box 147
Smyrna, Delaware 19977-9764

Only one application may be submitted by each person. Applications must be received at Bombay Hook, or be postmarked by, October 8. Shooting days will be as specified by the Refuge Manager.

ALL APPLICANTS WILL BE NOTIFIED, AND THOSE PERSONS
SUBMITTING MORE THAN ONE APPLICATION FOR REGULAR
DEER HUNTING AREA - SHOTGUN WILL BE DISQUALIFIED.

Hunters must possess a state hunting license or be exempt from the state license requirements as a result of being over 65 years of age, permanently disabled, or if under 15 years of age may hunt when accompanied by a person who is the lawful holder of a hunting license or has a lawful right to hunt.

(Tear off here)

APPLICATION TO HUNT ON REGULAR DEER HUNTING AREA - SHOTGUN BOMBAY HOOK NATIONAL WILDLIFE REFUGE \$2.00 NON-REFUNDABLE APPLICATION FEE REQUIRED

| | | | | |
|----------------------------------|------------|------------|---|-----|
| I prefer to hunt on these dates: | | | I will accept any other dates available. (Check) | Yes |
| 1st Choice | 2nd Choice | 3rd Choice | | No |
| | | | | |
| Date | Date | Date | Signature of Applicant | |

(Do not write in this space)

Year _____ Stand _____ has been reserved on the date indicated. Your reservation
Month _____ will be forfeited if you are not present at refuge headquarters 1 hour before
Day _____ legal shooting time on the day you plan to hunt.

Non-Transferable

APPENDIX D

APPLICATION TO HUNT ON HEADQUARTERS/FISCHER TRACT AREAS - SHOTGUN BOMBAY HOOK NATIONAL WILDLIFE REFUGE

1. Please fill in the card below completely.
2. Address the card to yourself by printing your name and address on the reverse side.
3. Tear off the card with your name on it and place it in an envelope addressed to:

Bombay Hook National Wildlife Refuge
R.D. #1, Box 147
Smyrna, Delaware 19977-9764

Only one application may be submitted by each person. Applications must be received at Bombay Hook, or be postmarked by, October 8. Shooting days will be as specified by the Refuge Manager.

**ALL APPLICANTS WILL BE NOTIFIED, AND THOSE PERSONS
SUBMITTING MORE THAN ONE APPLICATION FOR HEAD-
QUARTERS/FISCHER TRACT AREAS WILL BE DISQUALIFIED.**

Hunters must possess a state hunting license or be exempt from the state license requirements as a result of being over 65 years of age, permanently disabled, or if under 15 years of age may hunt when accompanied by a person who is the lawful holder of a hunting license or has a lawful right to hunt.

(Tear off here)

APPLICATION TO HUNT ON HEADQUARTERS/FISCHER TRACT AREAS - SHOTGUN BOMBAY HOOK NATIONAL WILDLIFE REFUGE \$2.00 NON-REFUNDABLE APPLICATION FEE REQUIRED

| | | | | |
|----------------------------------|------------|------------|---|-----|
| I prefer to hunt on these dates: | | | I will accept any other dates available. (Check) | Yes |
| 1st Choice | 2nd Choice | 3rd Choice | | No |
| | | | | |
| Date | Date | Date | Signature of Applicant | |

(Do not write in this space)

Year _____ Stand _____ has been reserved on the date indicated. Your reservation
Month _____ will be forfeited if you are not present at refuge headquarters 1 1/2 hours
Day _____ before legal shooting time on the day you plan to hunt.

Non-Transferable

Assigned Stand _____

PERMIT FOR DEER HUNTING

1. _____ (Name) _____ (State Hunting License #)

2. _____
 (Street) (City) (State) (Zip Code)

3. _____ (Auto Tag #) _____ (State)

To be on the Regular Deer Hunting Area on _____ only,
Headquarters Deer Hunt Area on _____ only, for the purpose

of hunting deer. The above-named hunter must check out by one hour after sunset. Entrance and exit to be by way of Dutch Neck Gate (Regular Area) or Headquarters Entrance (Headquarters Area).

The permittee agrees to conform to all applicable State and Federal laws and regulations and is permitted only the use of, and direct access to and from the Regular Deer Hunting Area or Headquarters Area. No vehicle travel is permitted off the gravel roads for any reason.

(PERMITTEE)

(REFUGE OFFICER - DATE)

THIS PERMIT MUST BE KEPT ON THE PERMITTEE AT ALL TIMES. AT THE END OF THE HUNT COMPLETE THE SECTION BELOW AND PLACE THIS SHEET IN THE PERMIT BOX AT DUTCH NECK GATE (REGULAR AREA), OR HEADQUARTERS (HEADQUARTERS AREA), OR FISCHER GATE (FISCHER AREA).

DEER HIT? YES NO

DEER BAGGED? YES NO

DEER MUST BE CHECKED AT REFUGE HEADQUARTERS. FAILURE TO RETURN THIS PERMIT
MAY RESULT IN LOSS OF YOUR HUNTING PRIVILEGE.

Hunter, when requested by Federal or State enforcement officers, must display for inspection all game, hunting equipment and ammunition.

Hunters are reminded that title 50 Code of Federal Regulations (27.81) prohibits entering or remaining in any National Wildlife Refuge when under the influence of alcohol to a degree that may endanger oneself or other persons. This will be strictly enforced.

APPENDIX F

BOMBAY HOOK NATIONAL WILDLIFE REFUGE
SMYRNA, DELAWARE
APPLICATION FOR HUNTING PERMIT

(PLEASE PRINT NAMES)

DATE: _____

BLIND: _____

NAMES: 1. _____ STATE LICENSE # _____
2. _____ STATE LICENSE # _____
3. _____ STATE LICENSE # _____

Received \$10.00 per blind fee: _____
Refuge Officer

United States Department of the Interior
U.S. Fish and Wildlife Service

BOMBAY HOOK NATIONAL WILDLIFE REFUGE - SOUTH WATERFOWL HUNTING AREA
PERMIT

Pursuant to the regulations of the Secretary of the Interior for the administration of National Wildlife Refuges under the jurisdiction of the Fish & Wildlife Service, permission is hereby given to:

_____ and _____ others to be on the South Waterfowl Hunting Area, for the purpose of hunting waterfowl only. Entrance and exit to be by way of the checking station at Port Mahon. The above-named hunter and party must check out at the checking station within one hour after sunset.

The above party is permitted only the use of, and direct access to and from Blind # _____. Permittee will conform to applicable Federal and State laws and regulations.

SIGNED: _____ DATE: _____

Received \$10.00 per blind fee: _____
Refuge Officer

KEEP THIS PERMIT ON YOUR PERSON-RECORD BAG ON THE OTHER SIDE-RETURN PERMIT TO BOX AT CHECK STATION. FAILURE TO RETURN PERMIT MAY RESULT IN THE LOSS OF HUNTING PRIVILEGES. BLIND FEE MUST BE PAID PRIOR TO USE OF BLIND.

Hunters, when requested by Federal and State enforcement officers, must display for inspection all game, hunting equipment, ammunition and license.

Hunters are reminded that Title 50 Code of Federal Regulations (27.81) prohibits entering or remaining in any National Wildlife Refuge when under the influence of alcohol to a degree that may endanger oneself or other persons. This will be strictly enforced.

APPENDIX G

BOMBAY HOOK NATIONAL WILDLIFE REFUGE SMYRNA, DELAWARE HUNTING PERMIT - SNOW GOOSE AREA

BAG RECORD

DATE: _____ # BAGGED _____ # CRIPPLED _____

NAMES: 1. _____ STATE LICENSE # _____

2. _____ STATE LICENSE # _____

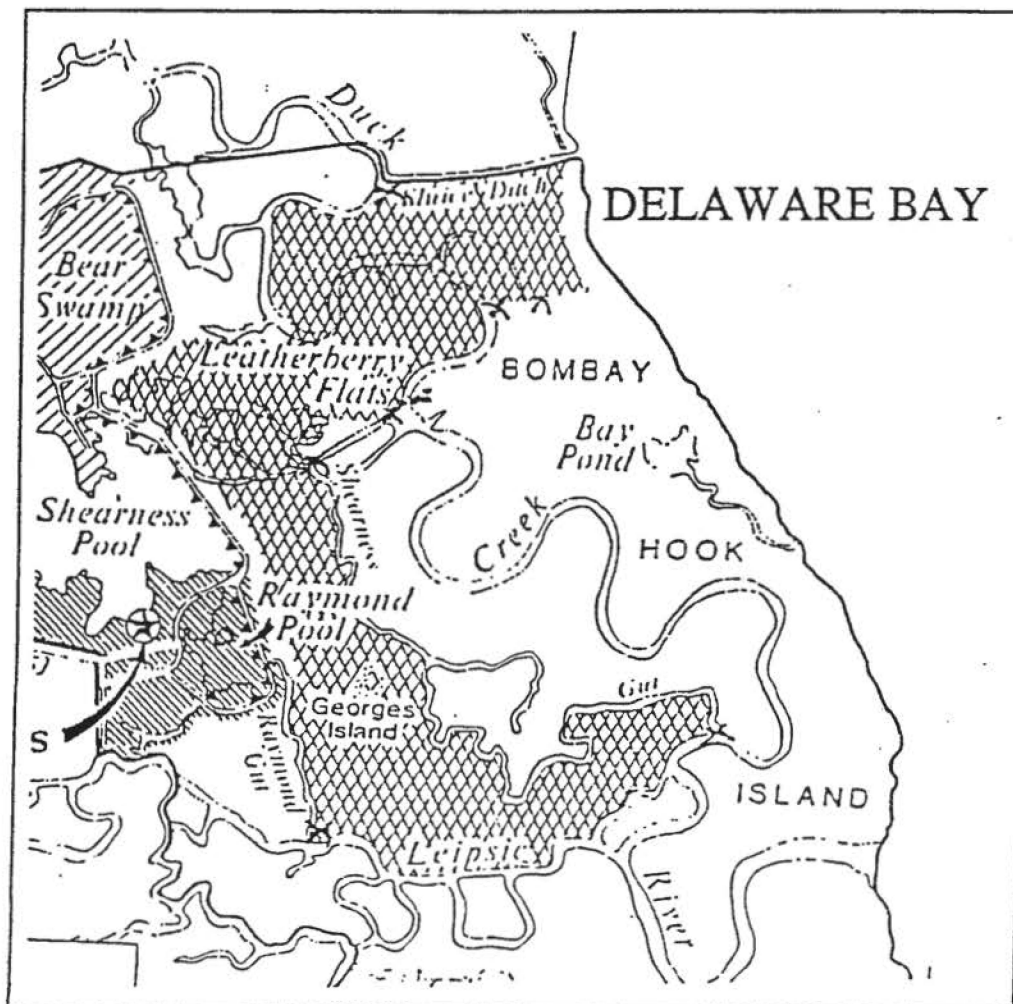
3. _____ STATE LICENSE # _____

4. _____ STATE LICENSE # _____

Permission is hereby given to _____ and _____ (#) others to be on the Snow Goose Hunt Area for the purpose of hunting snow geese only. Entrance and exit is to be by way of refuge headquarters. The above named hunters must check out at headquarters within one hour after sunset.

SIGNED: _____ DATE: _____ REFUGE OFFICER _____

KEEP THIS PERMIT ON YOUR PERSON - RECORD BAG - RETURN PERMIT TO BOX AT HEADQUARTERS. FAILURE TO RETURN PERMIT MAY RESULT IN LOSS OF HUNTING PRIVILEGE.



APPENDIX H

UNITED STATES DEPARTMENT OF THE INTERIOR U.S. FISH AND WILDLIFE SERVICE BOMBAY HOOK NATIONAL WILDLIFE REFUGE

BLIND _____
DATE _____
REC FEE _____
INITIALS _____

PERMIT - WEST WATERFOWL HUNTING AREA

Pursuant to the regulations of the Secretary of the Interior for the administration of National Wildlife Refuges under the jurisdiction of the Fish and Wildlife Service, permission is hereby given to:

1. _____ (Name (Permit Holder)) _____ (State Hunting License #)
2. _____
3. _____
4. _____

to be on the West Waterfowl Hunting Area, for the purpose of hunting waterfowl only. Entrance and exit to the hunt areas is via the Dutch Neck or Fischer gates (Rt. 9). All hunting ENDS at 12:00 noon EST each day. Gates will be locked at 1:00 p.m.

The permittees agree to conform to all applicable State and Federal laws and regulations, including those on the attached sheet. You are permitted only the use of, and direct access to and from the blinds listed above. Vehicle travel is permitted ONLY ON DESIGNATED ROADS. Driving off roads and directly to and from the blinds IS PROHIBITED.

This permit must be kept with the party at all times. Complete the Bag Record (below) and place it in either the permit box at Dutch Neck or the Refuge office.

BAG RECORD FOR YOUR BLIND

| <u>BIRD</u> | <u>BAGGED</u> | <u>CRIPPLED</u> |
|--------------|---------------|-----------------|
| SNOW GOOSE | _____ | _____ |
| CANADA GOOSE | _____ | _____ |
| DUCKS | _____ | _____ |

IMPORTANT - Bald eagles may be present during the latter part of the goose season. Be sure of your target.

Hunters are reminded that Title 50 Code of Federal Regulations (27.81) prohibits entering or remaining in any National Wildlife Refuge when under the influence of alcohol to a degree that may endanger oneself or other persons. This will be strictly enforced.

SNOW GOOSE AREA

- 1) Hunting will be during the Delaware snow goose season on days when the area is indicated open by the Refuge Manager.
- 2) Permits will be issued at refuge headquarters one hour before legal shooting time by a ticket-lottery system. Hunters arriving after the lottery will be issued permits on a first-come, first-served basis until 3:00 p.m. A maximum of 30 parties of up to 4 individuals will be permitted at any one time.
- 3) No blinds are provided. Blinds must be temporary in nature, and removed at the conclusion of the day's hunt. No hunting is permitted within 300 yards of the dike roads, 500 yards of Sluice Ditch, 100 yards of bay shore or 500 yards of Lepsic River.
- 4) A boat is necessary to reach the hunt area.
- 5) Only snow geese may be taken.
- 6) No fee will be charged.
- 7) The hunt area consists of 2 units; either one or both may be open. Inquire of the check station attendant prior to hunting.
- 8) Permits must be returned to permit box at Headquarters before leaving the refuge.

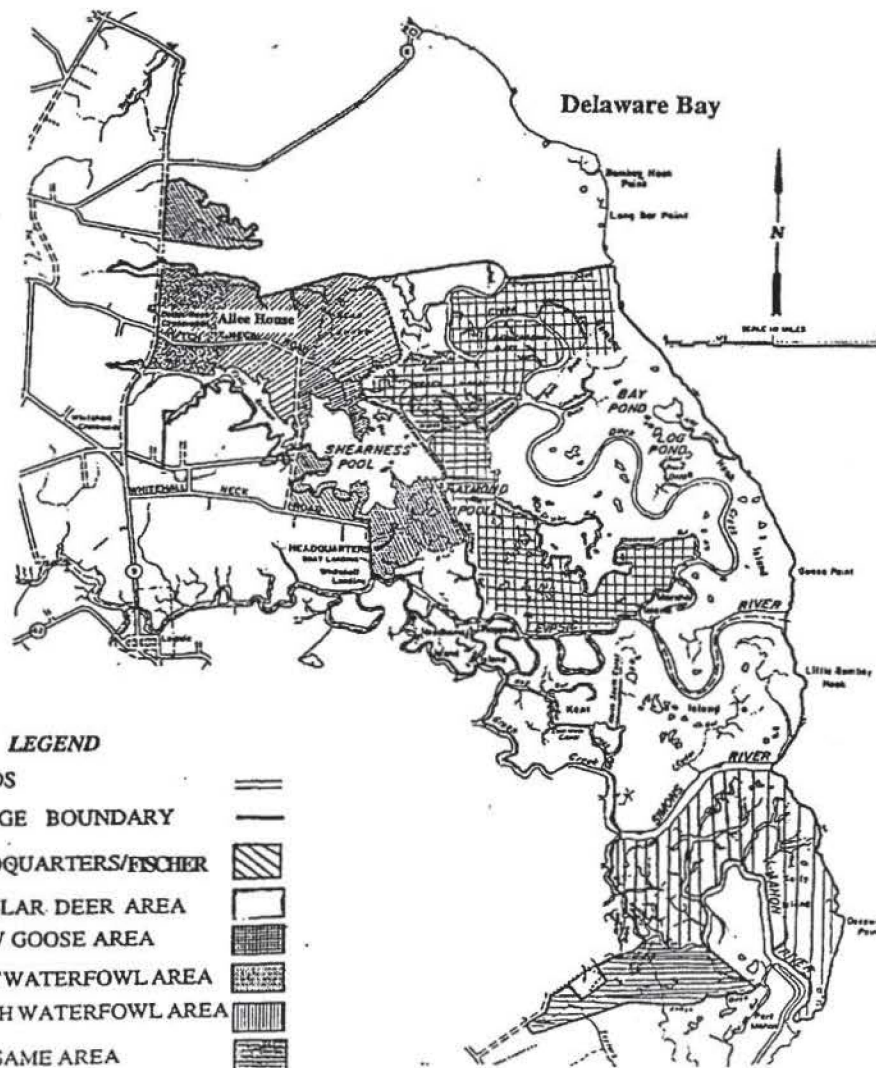
ALL GAME HUNTING

SOUTH UPLAND HUNTING AREA

- 1) Area is open to big game, small game and waterfowl hunting in accordance with applicable state and federal seasons.
- 2) No hunting is permitted from March 1 through August 31.
- 3) No fee will be charged.

For Further Information Contact:

Refuge Manager
Bombay Hook NWR
R.D. #1, Box 147
Smyrna, DE 19977
Ph. (302) 653-9345



BOMBAY HOOK NATIONAL WILDLIFE REFUGE



PUBLIC HUNTING LEAFLET

Bombay Hook National Wildlife Refuge offers the following regulated hunts:

DEER

Headquarters/Fischer *
Regular Shotgun *
Muzzleloader *
Archery

WATERFOWL

West Waterfowl Area *
South Waterfowl Area *
Snow Goose Area

ALL GAME

South Upland Area

* Requires advance registration

Deer, waterfowl and small game hunting will be allowed on Bombay Hook National Wildlife Refuge subject to applicable state and federal regulations and the following special conditions:

GENERAL REQUIREMENTS

- 1) Hunters must possess a valid state hunting license. Persons under 15 years and over 65, or permanently disabled are exempt. Persons 15 years and under must be accompanied by a licensed hunter. Non-hunters are allowed only to accompany a permitted juvenile.
- 2) Reservations are obtained by contacting the Refuge Manager in writing for applications. Muzzleloader applications must be postmarked prior to September 15. All other hunting applications must be postmarked by October 8. Archery deer, snow goose and South Waterfowl Area hunters are not required to have advance reservations. Only one application per hunter, per hunt will be accepted. Duplicate applications will be cause for disqualification.

3) Successful applicants are selected by public lottery. Failure to appear on the day of the hunt will result in forfeiture of the reservation. Forfeited reservations and permits not requiring advance reservation will be awarded to stand-by hunters by a ticket-lottery system the day of the hunt.

4) All hunters except those using the South Upland Area are required to obtain a daily permit prior to hunting.

5) Waterfowl hunters are required to have both a state and federal waterfowl stamp, according to state and federal regulations.

6) Use or possession of alcoholic beverages on hunt areas during any scheduled hunt is prohibited.

7) Hunters, when requested by federal or State enforcement officers must display for inspection, all game hunting equipment and ammunition.

DEER HUNTING

GENERAL

1) **Application Fee.** All applications for Regular Area and Headquarters/Fischer Area firearms deer hunts must be accompanied by a \$2.00 application fee.

2) No nailed deer stands, platforms ladders or blinds, other than those provided by the government are permitted. Tree stands must be portable, temporary in design and completely removed after use.

3) All deer must be checked at the refuge headquarters check station before leaving the refuge.

4) All firearms deer hunters must display a minimum of 400 square inches of **solid** hunter orange on the head, chest and back while hunting.

REGULAR AREA

Shotgun & Primitive Firearms

1) Individuals selected by advance reservation must appear at headquarters prior to one hour before legal shooting time on the day of the hunt to be issued a daily permit.

2) A standby ticket-lottery will be held one hour before legal shooting time for all forfeited reservations.

3) 41 hunters will be allowed on the area and 41 elevated deer stands are provided.

4) All hunters must use assigned stands between the hours of 1/2 hour before sunrise until 8:00 a.m. and from 4:00 p.m. until 1/2 hour after sunset. During the time between 8:00 a.m. and 4:00 p.m. hunters may leave their stand to hunt or leave the area.

5) Shotguns are permitted only during the 1st Friday, Saturday, and Wednesday of the Delaware November season, the Saturday of the Delaware December season; and the Friday of the Delaware January season.

6) Primitive firearms are permitted only during the Monday, Wednesday, and Saturday of the Delaware October muzzleloader season.

7) A fee of \$5.00 will be charged and collected prior to the issuance of a daily permit.

Archery

1) Permits are issued at headquarters by a ticket-lottery one hour before legal shooting time.

2) Hunting is permitted on the first two Saturdays of the State season. Hunting ends each day at 11:00 a.m.

3) The maximum number of hunters allowed on the area is 60.

4) 41 elevated deer stands are available for use on a first-come, first-served basis. Use of stands is optional.

5) Entrance fee required. Hunters must possess current federal duck stamp or pay \$1.00 daily fee.

HEADQUARTERS/FISCHER AREA

Shotgun

1) Individuals having reservations must appear at headquarters prior to 1 1/2 hours before legal shooting time on the day of the hunt to be issued a daily permit.

2) A standby ticket-lottery drawing will be held 1 1/2 hours before legal shooting time for all forfeited reservations.

3) 38 hunters will be allowed on the Headquarters Area and 6 on the Fischer Tract. A total of 38 elevated stands are located within the two units. Six sites are designed as stands for non-ambulatory hunters. All hunters must confine hunting to their assigned stand. Non-ambulatory hunters may have an assistant accompany them; however, this assistant may not possess a firearm or ammunition nor fire a weapon for any reason.

4) Hunting is permitted only during Monday and the second Friday of the November State season, and the Friday of the December State season.

5) Hunters may leave the hunt area after 9:00 a.m. If a hunter leaves, he may return once more during the day. He must return prior to 3:00 p.m. Departure from area prior to 9:00 a.m. or between 3:00 p.m. and 1/2 hour after sunset may result in the loss of future hunting privileges.

6) No hunter may possess a loaded weapon while away from his assigned stand except to pursue a deer which he cripples. Pursuit of a crippled animal must begin within 30 minutes and end within one hour unless authorization to continue the search is given by a refuge employee.

7) Persons who successfully kill and retrieve a deer may leave the area at any time.

8) A fee of \$10.00 will be charged and collected prior to the issuance of a daily permit.

Archery

1) Archery hunting will be permitted on the Fischer Area during all weekdays in October, when the State season is open. The maximum number of hunters allowed on the area is 6. Daily permits will be issued on a self service basis at the entrance to the Fischer Area. Permits may not be picked up earlier than 2:00 a.m. on the day of the hunt. Hunting ends at 11:00 a.m.

2) Six elevated deer stands are available for use on a first-come, first-serve basis. Use of stands is optional.

3) Entrance fee required. Current Federal Duck Stamp or \$1.00 daily fee.

WATERFOWL HUNTING

GENERAL

1) Steel shot is required of all waterfowl hunters. No person shall use or have in possession lead shot shells.

2) Only waterfowl and coot may be taken while hunting on the South and West Waterfowl Areas. Only snow geese may be taken on the Snow Goose Area.

3) Hunt areas may be closed completely or in part, without notice when wind, icy road conditions, etc. make entry onto hunt areas hazardous.

4) Hunting is permitted only from government blinds, except in the Snow Goose Area.

5) The possession of an uncased gun or shooting outside of an assigned blind is prohibited except in active pursuit of crippled waterfowl. In such cases a hunter must only fire at crippled birds.

6) No decoys are provided.

7) There will be no hunting on Christmas Day.

SOUTH WATERFOWL AREA

1) Hunting is allowed only during duck season on Monday, Wednesday, Friday, and Saturday.

2) Permits will be issued at the check station at Port Mahon by a ticket-lottery system 1 1/2 hours before legal shooting time. Hunters arriving after 7:00 a.m. will be issued permits on a first-come, first-served basis until 1:00 p.m. at the Little Creek Management Area Check Station.

3) No more than 3 hunters may occupy a blind.

4) A boat is necessary to reach the blinds. Boats with motors are recommended.

5) Hunters must leave the area and turn in permits prior to one hour after sunset each hunting day.

6) A fee of \$10.00 per blind will be charged in advance of permit issuance.

7) Blinds will be allocated to only one party per day.

WEST WATERFOWL AREA

1) Hunting will be on Tuesday and Saturday from legal shooting time until 12:00 noon during the Canada goose hunting season.

2) Individuals with reservations must appear at headquarters prior to one hour before legal shooting time on the morning of the hunt.

3) A stand-by lottery drawing will be held one hour before legal shooting time for all forfeited reservations.

4) No more than 4 persons may occupy a blind.

5) Permits must be returned to the box at either Dutch Neck Gate or Fischer Area Gate before leaving the refuge.

6) A fee of \$10.00 per blind will be charged and collected prior to the issuance of a daily permit.

7) No person may have in their possession or use, more than 15 shells.

8) Hunting visits will be limited to one per person for the 1992-93 season.

APPENDIX J

Annual Hunting Program

Big Game
Upland Game
Migratory Game Birds

Bombay Hook National Wildlife Refuge
1992-93

A. Biological Soundness

1. Big Game

Plans for white-tailed deer hunts at Bombay Hook are based on a number of factors including the following:

- 1) Deer population size and distribution.
- 2) Expected or planned harvest.
- 3) Crop depredations.
- 4) Hunter participation.
- 5) Costs.
- 6) Timing and zoning of hunts to avoid conflicts.
- 7) Public safety.

The white-tailed deer population at Bombay Hook is exhibiting a moderate increase. This is based on the annual hunter harvest as well as inventory data collected. All deer killed on the refuge are examined, aged, weighed, and sexed by refuge personnel. All animals examined during the past year appeared to be in good physical condition. Habitat conditions are excellent with plenty of natural food and cover available as well as an abundance of agricultural crops planted by the cooperative farmers. The highly controlled Headquarters Deer Hunt, as well as the Regular Deer Hunt, assist in keeping the population at a healthy level and reduce depredation on adjacent private lands. Changes for this year deal mostly with the operation of the Shotgun Deer Hunt. The state has instituted a special antlerless hunt on December 18 and 19 to help control a rapidly expanding population in Delaware. We will take advantage of this extra season with a hunt on the Headquarters on the 18th and on the Regular Area on the 19th.

The state is also allowing two deer to be taken for the year, during any season. This differs from past years in that two deer could be taken for the year, but only one each during shotgun, muzzleloader or archery. The new change will allow for two deer to be taken on the same

day. Our only difference from the state is that one of the two deer taken at Bombay Hook must be antlerless. This will ensure that we will minimize "trophy" hunting and harvest more deer.

Shotgun hunting on both the Headquarters and the Fischer Tracts will again be conducted concurrently. Following is a summary of the deer hunts at Bombay Hook during 1991/92 with the previous year's hunt data in parenthesis.

Regular Deer Hunt Area

| | <u>Hunter Visits</u> | <u># of Days Open</u> | <u># of Deer Harvested</u> | <u>% Success</u> |
|--------------|--------------------------|---------------------------|--------------------------------|------------------|
| Archery | 61 (86) | 2 (4) | 2 (0) | 3.3 (0.0) |
| Muzzleloader | 145 (109) | 3 (3) | 19 (2) | 13.1 (1.8) |
| Shotgun | 202 (208) | 4 (4) | 33 (38) | 16.3 (18.3) |
| Totals | 408 (403) | 9 (11) | 54 (40) | 13.2 (9.9) |

Headquarters Deer Hunt Area

| | <u>Hunter Visits</u> | <u># of Days Open</u> | <u># of Deer Harvested</u> | <u>% Success</u> |
|-----------------|--------------------------|---------------------------|--------------------------------|------------------|
| Elevated Stands | 93 (101) | 2 (2) | 22 (32) | 23.7 (34.4) |
| Non-ambulatory | 4 (4) | (Same Days) | 1 (2) | 25.0 (50.0) |
| Archery | 56 (0) | 19 | 1 | 1.8 (-) |
| Total | 153 (97) | 21 (2) | 24 (34) | 15.7 (35.1) |

2. Upland Game

Hunting of upland game is permitted only on the 551 acre South Upland Hunting Area. The small game population appears to have remained at stable levels based on casual observations and hunter bag checks. The white-tailed deer population is also stable on the area and sustains moderate harvest. No permits are required on this area.

3. Waterfowl

Plans for waterfowl hunts at Bombay Hook are based on a number of factors including the following:

- 1) Effects of the hunts on waterfowl utilization of the refuge as to total use days and areas utilized.
- 2) Expected or planned harvest.
- 3) Costs
- 4) Hunter participation.
- 5) Timing and zoning of hunts to ensure minimum conflict with other public uses.
- 6) Public safety.
- 7) Effect of the hunt on critical waterfowl populations - e.g. black duck, Canada goose.
- 8) Waterfowl effects on the habitat - e.g. snow goose eat-outs.

a) Canada Geese

Hunting for Canada geese is permitted on the West Waterfowl Area (743 acres), the South Waterfowl Hunting Area, and the South Upland Hunting Area, although virtually all of the birds are bagged on the West Waterfowl Area. The Canada goose flock on the Delmarva Peninsula and at Bombay Hook has been at a high level since the mid-sixties although it has been decreasing since a peak during the late 70's. The hunting programs at Bombay Hook provide recreational opportunities to a significant percentage of Delaware hunters. Being a small state, the considerable acreage open to waterfowl hunters at Bombay Hook is important to many people. Providing hunting opportunities on the refuge mollifies depredation complaints from area farmers directed to the refuge. The impoundments, salt marsh, and croplands of Bombay Hook provide excellent habitat for migrating and wintering geese. There is a great amount of interest in our waterfowl hunt programs in general from the public as well as the Delaware Division of Fish and Wildlife due to the relatively small amount of public hunting areas elsewhere in the State. Last year several restrictions were instituted on the West Area to decrease refuge harvest and allow more acreage for Canada geese to rest. This seems to have been quite successful, with refuge (and statewide) populations showing a slight increase.

Delaware's season on Canada geese this year will remain at 40 days with a one bird bag limit. Because of the recent decline in Canada goose populations, we are maintaining our restrictions this year on the West Waterfowl Area hunt program. All of the blinds

east of the Allee House gate will remain closed, leaving eleven blinds open for hunting. Hunting will be on Tuesdays and Saturdays only. Due to the large demand for Canada goose hunting and the limited opportunities, all hunters will be again restricted to one visit on the West Waterfowl Area. Current blind arrangement results in an additional area of about 300 acres which serves as sanctuary for the goose flock. The general public is also restricted from this resting/feeding area.

b) Snow Geese

Snow goose hunting will be permitted on all the areas in which Canadas may be taken and an additional 2,000 acres of tidal salt marsh in which only snows may be taken. All but a handful of snows are traditionally taken from the special salt marsh Snow Goose Hunting Area. The tidal marsh is open to hunting only when large concentrations of snows are utilizing it. Hunting is permitted there in an attempt to disperse the flock to reduce "eat-outs" on concentrated acreages of tidal salt marsh. The snow goose population on the Delmarva Peninsula has increased significantly since 1980. Bombay Hook populations peaked around 1987 (about 75,000) and have decreased moderately over the past few years. The population is continuing to disperse throughout the peninsula. We had a lesser concentration of snow geese on the salt marsh after the first of November. Hunter harvest both on and off the refuge in this area is virtually insignificant in controlling the size of the population. However, the special snow goose hunt within the salt marsh has had some effect in dispersing the birds and minimizing damage. No major changes are proposed for the 1992-93 season. Last season participation during the first two week period was high. Following mid-November; however, participation fell off dramatically. During the time that hunter participation was high the desired effect of snow goose dispersal was achieved. We plan to take advantage of the two hunting zones in the marsh next season to concentrate the hunters in the areas that will do the most to disperse the flocks. We will shut down the hunts after the mid-November "Bombay Hook only" special season unless large concentrations of geese warrant re-opening.

c) Ducks

Duck hunting is permitted on the West Waterfowl Area, the South Upland Hunting Area, and the South Waterfowl Area. However, ducks are taken in the first two locations incidental to the hunting of

other species. The primary duck hunting location on the refuge is the South Waterfowl Hunting Area (2,123 acres). This area is located within the tidal salt marsh but is not within the focus of heaviest refuge concentrations of ducks or geese. Hunting is permitted only from twenty government built blinds and only four days per week during the duck season. It is our belief that the combination of State and Federal Regulations in addition to Special Refuge Regulations limit the harvest to numbers which will not adversely affect the populations of any species taken. We plan to continue the system of blind allocation after the initial lottery that was begun last year and proved successful (State gives out unissued permits at their Little Creek facility until 1 p.m.).

The following is a summary of the waterfowl hunts at Bombay Hook during the 1991-92 season. The previous year's hunt data is listed in parenthesis.

West Waterfowl Hunting Area

| <u>Number of Hunters</u> | <u>Number of Canada Geese Harvested</u> | <u>Number of Snow Geese Harvested</u> | <u>Canada Geese/Hunter</u> |
|--------------------------|---|---------------------------------------|----------------------------|
| 315 (662) | 107 (205) | 48 (22) | 0.34 (0.31) |

Snow Goose Hunting Area

| <u>Number of Hunters</u> | <u>Number of Snow Geese Harvested</u> | <u>Geese/Hunter</u> |
|--------------------------|---------------------------------------|---------------------|
| 422 (426) | 688 (389) | 1.63 (0.91) |

South Waterfowl Hunting Area

| | <u># of Hunters</u> | <u># of Ducks Harvested</u> | <u># of Black Ducks Harvested</u> | <u>% of Kill Blacks</u> | <u>Ducks/Hunter</u> |
|-------------|---------------------|-----------------------------|-----------------------------------|-------------------------|---------------------|
| Nov (Early) | 152 (96) | 215 (85) | 56 (17) | 26.0 (30.9) | 1.41 (0.57) |
| Nov (Late) | 47 (90) | 55 (91) | 18 (14) | 32.7 (15.4) | 1.17 (1.01) |
| Dec - Jan | 279 (261) | 212 (267) | 78 (54) | 36.8 (20.2) | 0.76 (1.02) |
| TOTALS | 478 (447) | 482 (413) | 152 (85) | 31.5 (20.2) | 0.76 (0.92) |

B. Economic Feasibility

Total costs for all hunts conducted during 1991/92 seasons were as follows:

| | |
|------------------------|-------------|
| South Waterfowl Hunt | \$ 3,262.95 |
| West Waterfowl Hunt | \$ 2,252.57 |
| Snow Goose Hunt | \$ 1,376.96 |
| Young Waterfowlers | \$ 64.00 |
| South Upland Hunt | \$ 38.40 |
| Archery Deer Hunt | \$ 501.32 |
| Muzzleloader Deer Hunt | \$ 1,813.19 |
| Regular Deer Hunt | \$ 2,576.58 |
| Headquarters Deer Hunt | \$ 2,369.05 |

| | |
|---|--------------------|
| Total salary for all hunts (includes overtime & holiday) | <u>\$14,255.02</u> |
|---|--------------------|

Annual costs for the hunts require approximately \$1,000 - \$1,500 in supply and printing costs not related to salaries (including overtime and holiday pay). Our proposed budget for the 1992-93 season will include requests for this amount of funding and if approved will provide sufficient funds to cover the expenses of the hunts.

During the 1991-92 season we collected \$3,250.00 in user fees from waterfowl hunters on the South and West Waterfowl Areas, \$2,752.00 from deer hunt applications, \$2,745.00 from deer hunt user fees and \$65.00 in entrance fees from refuge hunters who did not possess a duck stamp or Golden pass. The refuge receives 30% of this amount back to cover some of the costs of administering the program. Therefore the amount added to our 4960 account this year was \$2,643.60. All user fees will continue to be collected at the same rate next year in 1991-92.

C. Relationship with Other Programs and Recreational Opportunity

The bald eagle and the peregrine falcon are the only two endangered species which are found on the refuge. A pair of bald eagles normally resides here year round. The areas most frequented by the eagles are not open to waterfowl hunting. The eagles do occasionally fly over the areas where waterfowl hunting is permitted; however, hunters are advised on their permit and by handouts of the presence of eagles and are reminded to be sure to identify their target before shooting.

Peregrine falcon sightings are most frequent in the vicinity of the nesting tower south of the Leipsic River. This area is not open to the hunting of waterfowl.

The deer hunts and all waterfowl hunts take place in areas which are closed to the general public during the hunts. Portions of the refuge not open to hunting are always

available for the visiting public even on hunt days. Also, all October archery hunts are scheduled on weekdays to avoid conflicts between hunters and general visitors on busy fall weekends.

During each deer and waterfowl hunt a limitation is placed on the number of hunters permitted. Each hunter or hunting party receives a daily permit and map advising him of the area open to hunting and rules and regulations he is expected to obey.

D. Refuge - Specific Regulations

No changes are necessary in our hunt regulations which were published in the Federal Register.

E. Compatibility

Bombay Hook National Wildlife Refuge was established under the authority of the Migratory Bird Conservation Act in 1937 for the conservation of migratory birds. A total of 2,800 acres (18.6%) of the refuge will be open to the hunting of resident game species, principally deer. Hunting of waterfowl and other migratory game birds will be permitted on 5,417 acres (35.8%) of the refuge's 15,122 acres. Big game hunting will be used to manage the refuge deer population as well as provide quality hunting opportunity and will occur at times and places that will not impact habitat and cause only temporary disturbances to other refuge wildlife. Upland Game/Big Game/Migratory Bird hunting will be managed as an integral part of a comprehensive refuge wildlife management program.

Submitted by: Paul D. Daly Date: 4-30-92
Refuge Manager

Reviewed by: _____ Date: _____

Approved by: _____ Date: _____
Associate Manager - South

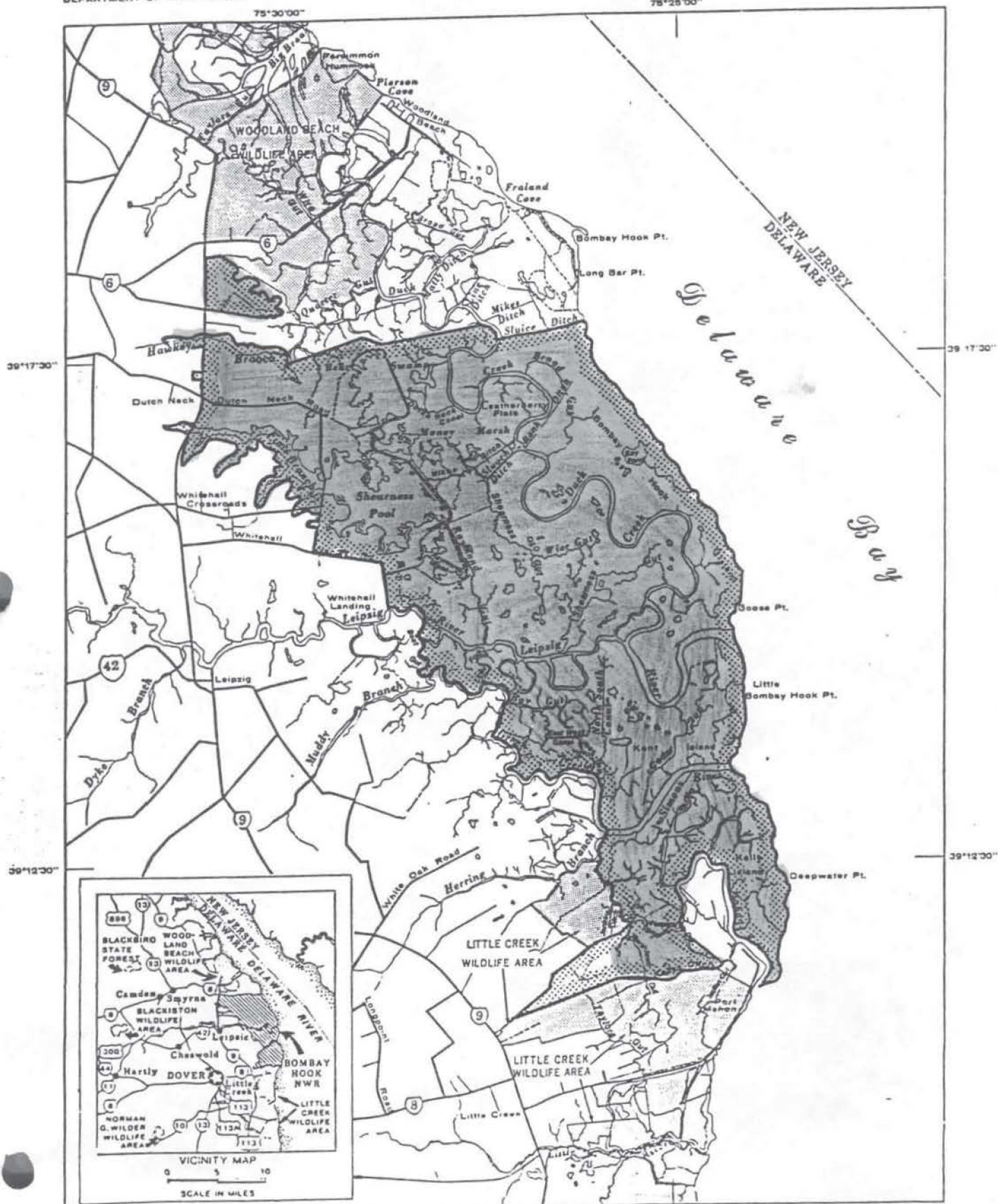
APPENDIX K

BOMBAY HOOK NATIONAL WILDLIFE REFUGE

KENT COUNTY, DELAWARE

UNITED STATES
DEPARTMENT OF THE INTERIOR

UNITED STATES
FISH AND WILDLIFE SERVICE



COMPILED IN THE DIVISION OF REALTY FROM
SURVEYS OF THE USGS AND USFWS

NEWTON CORNER MASSACHUSETTS
REVISED: NOVEMBER 1985



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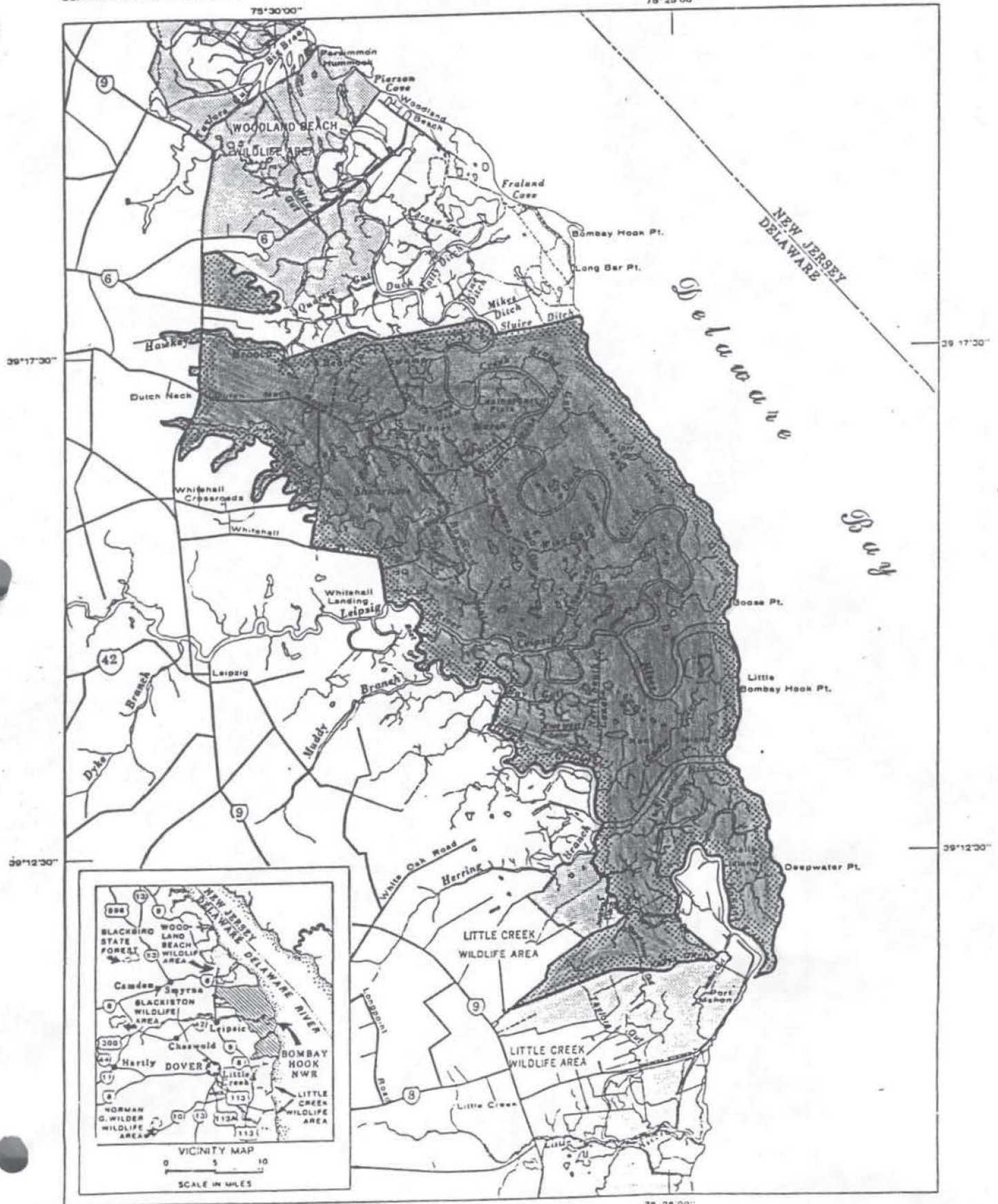
APPENDIX L

BOMBAY HOOK NATIONAL WILDLIFE REFUGE

KENT COUNTY, DELAWARE

UNITED STATES
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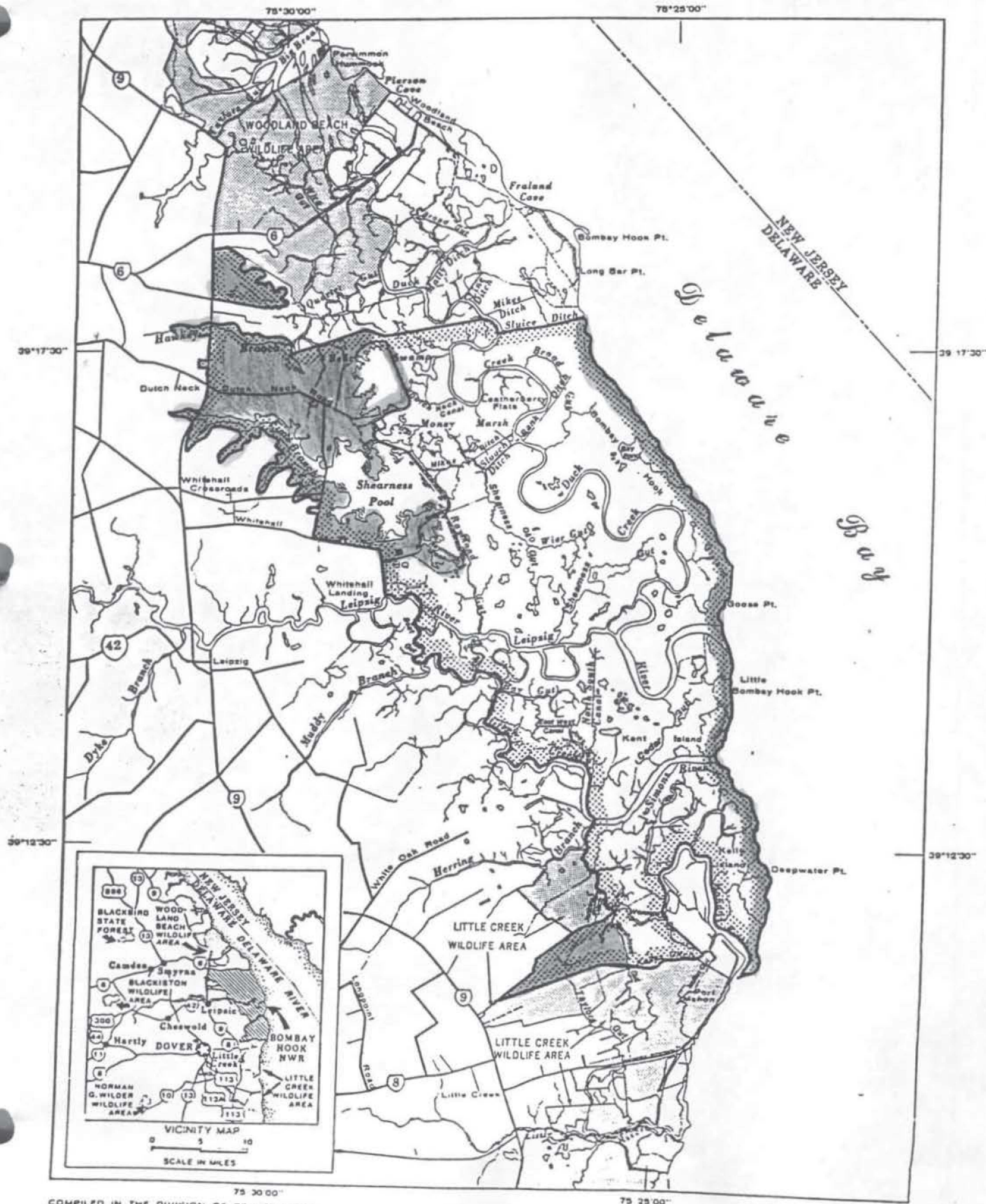
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BOMBAY HOOK NATIONAL WILDLIFE REFUGE

KENT COUNTY, DELAWARE

UNITED STATES
DEPARTMENT OF THE INTERIORUNITED STATES
FISH AND WILDLIFE SERVICE

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COMPILED IN THE DIVISION OF REALTY FROM
SURVEYS OF THE USGS AND USFWS

NEWTON CORNER MASSACHUSETTS
REVISED NOVEMBER 1985

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