APPENDIX A

PROJECT INFORMATION

Table A-1. MCAS Beaufort, South Carolina - INRMP Projects Cost by Fiscal Year

PROJECT #	PROJECT TITLE	FUNDING PRIORITY	COST BY FISCAL YEAR						
			2011	2012	2013	2014	2015	2016	TOTAL
1	Wetland Mitigation Bank*	S	$60,000	$47,000	$0	$0	$0	$0	$107,000
2	Wetland Delineation	C	$0	$0	$0	$0	$0	$0	$0
3	Wetland Enhancement	S	$0	$0	$0	$0	$0	$0	$0
4	Wetland Monitoring	C	$2,812	$2,925	$30,000	$31,000	$32,000	$33,000	$131,737
5	Invasive Species Control	S	$4,606	$5,000	$5150	$5,305	$5,464	$5,628	$31,153
6	Forest Product Sales	S	$0	$0	$0	$0	$0	$0	$0
7	Fire Management	S	$692	$1,200	$1,250	$1,275	$1,300	$1,350	$7,067
8	Forest Protection	S	$0	$0	$0	$0	$0	$0	$0
9	Forest Inventory	S	$8,000	$0	$0	$0	$0	$8,000	$16,000
10	Timber Stand Improvement	S	$0	$3,000	$3,120	$3,244	$4,000	$4,160	$17,524
11	Nongame Management	S	$0	$0	$0	$0	$3,266	$3,397	$6,663
12	Migratory Bird Surveys	S	$0	$0	$0	$0	$0	$0	$0
13	Monitor & Maintain *Lindera mellisifolia*	C	$12,445	$8,857	$9,212	$9,580	$9,963	$10,362	$60,419
14	Other RTE Surveys	C	$9,000	$9,360	$9,734	$10,100	$10,528	$10,950	$59,672
15	Manage Small Game	S	$2,847	$2,960	$3,079	$3,202	$3,366	$3, 481	$15,454
16	Manage Deer	C	$0	$14,801	$15,393	$16,041	$16,334	$16,987	$79,556
17	Conduct BASH Program	S	$181,580	$203,095	$209,188	$215,464	$221,928	$228,586	$1,259,841
18	Other ADC	S	$0	$0	$0	$0	$0	$0	$0
19	Provide Pond Access	S	$0	$0	$0	$0	$0	$0	$0
20	Fish Pond Management	S	$2,000	$4,441	$4,618	$4,802	$4,984	$5,194	$26,039
21	Conduct Hunting & Fishing Program**	S	$0	$0	$0	$0	$0	$0	$0
22	Other Outdoor Recreation	S	$2,135	$2,220	$2,309	$2,402	$2,498	$2,598	$14,162
23	Public Outreach	S	$0	$0	$0	$0	$0	$0	$0
24	Narural Resources Staffing	C	$0	$0	$0	$0	$0	$0	$0
25	Natural Resources Training	C	$11,500	$12,500	$13,000	$13,520	$14,061	$14,623	$79,204
26	INRMP Review	C	$0	$10,000	$20,000	$20,000	$20,000	$0	$70,000
27	Renew INRMP	C	$30,000	$0	$0	$0	$0	$50,000	$80,000
ALL PROJECTS			$327,617	$327,359	$326,053	$335,935	$349,692	$394,835	$2,061,491
COMPLIANCE PROJECTS			$65,757	$58,443	$97,339	$100,241	$102,886	$135,992	$260,588
STEWARDSHIP PROJECTS			$261,860	$268,916	$228,714	$235,694	$246,806	$258,913	$1,500,903

* Cost not yet programmed.

** Cost included in projects 16, 21, and 22.

*** Part of administrative overhead.

PROJECT DATA SHEET #1

Project Title: Wetland Mitigation Bank

Project Actions: Return remaining agricultural outlease lands to wetlands and other high quality habitats for habitat improvement and mitigation credit. Conduct actions through FY13.

Tasks:

1) Initiate actions in the MBI. This includes the land clearing, construction, tree planting, and other on the ground work.
2) Monitor both the success of the habitat creation and birds (for BASH). Monitoring will be a minimum of 7 years post construction.

Drivers: 16 USC 670, 32 CFR Part 190, DoD Directive 4715.5

Goal(s): 2, 8

Time Frame: Perpetual.

Funding: O&M, MC

Regulatory Approval: Army Corps of Engineers, USFWS, SCDNR

Implementation Vehicle: Mitigation Banking Instrument.

Priority: 2

Measure of Success: Acceptance of the mitigation bank by the relevant authorities through:

1) Survivability of the planted trees (75%)
2) Demonstration of wetland hydrology through 7 years of monitoring
3) Protection of the bank site in perpetuity
4) Invasive plant control

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PROJECT DATA SHEET #2

Project Title: Wetland Delineation / Evaluation

Project Actions: Keep the installation's wetland maps up to date; this includes getting newly acquired property delineated in a timely manner.

Tasks:

1) Prior to 2013, have the USACE evaluate the current wetland map and re-approve if feasible; otherwise, redo wetlands map. Repeat this procedure in 2018.
2) Obtain delineations for recently acquired properties as soon as practicable following acquisition of the land. Funding for these delineations will be added to Table I-1 when requested.
3) Wetland maps will be made available to the planning department when conducting site approvals for new construction projects.
4) Update GIS layer of wetland boundaries when maps are revised.

Drivers: 33 USC 1251 *et seq*, 32 CFR Part 190, DoD Directive 4715.3

Goal(s): 6, 7, 8

Time Frame: 2002; implementation of enhancement and recovery recommendations will be scheduled after scope of efforts is determined.

Funding: Environmental compliance, O&M

Regulatory Approval: Actions to enhance degraded wetlands may require ACOE approval. All enhancement and recovery of wetlands should be coordinated with the ACOE and the State of South Carolina to obtain maximum mitigation credits where feasible. This may entail establishing a mitigation bank.

Implementation Vehicle: Contract; in house

Priority: 1

Measure of Success: Provision of accurate wetland map; number of mitigation credits used or banked.

PROJECT DATA SHEET #3

Project Title: Wetland Enhancement

Project Actions: MCAS Beaufort will enhance the existing wetlands by prescribed fire, and eliminating invasive exotic plants.

Tasks:

1) Use herbicides and other methods to remove invasive plants from the wetlands on the Installation. (See Invasive Plants Section below.)
2) For wetlands in pine stands, continue to prescribe burn when burning the pine stands. (See Forest Management section below.)
3) Study wetlands to determine if any need to be replanted with native species.

Drivers: 33 USC 1251 *et seq*, 32 CFR Part 190, DoD Directive 4715.3.

Goal(s): 6, 7, 8

Time Frame: Prescribe burn on a three-year rotation. Eliminate invasive plants as soon as practical.

Funding: Environmental compliance, O&M

Regulatory Approval: Pesticide applicators must have proper certifications and training.

Implementation Vehicle: In house for clean up and prescribed burning; contract for pesticide applications.

Priority: 1

Measure of Success: Completed task. Presentation of information to agencies at annual review.

Comtrack #: BE06014

PROJECT DATA SHEET #4

Project Title: Wetland Monitoring

Project Actions: MCAS Beaufort will assess wetland function periodically as follows (items 1 and 2 are mandatory; items 3 and 4 are stewardship):

Tasks:

1) Keep records of area of wetlands created, restored, enhanced, drained or filled each year.
2) Utilize data from migratory bird surveys, invasive species monitoring, and other studies in evaluating the wetlands.

Drivers: 33 USC 1251 *et seq*, 32 CFR Part 190, DoD Directive 4715.3

Goal(s): 6, 7, 8

Time Frame: Keep records each year. Alternate between floral and faunal studies each year.

Funding: Environmental compliance, O&M

Regulatory Approval: Larval amphibian surveys may require SCDNR permit.

Implementation Vehicle: Contract for surveys and in house for record keeping.

Priority: 1

Measure of Success: Completed task. Presentation of information to agencies at annual review.

PROJECT DATA SHEET #5

Project Title: Control of Invasive and Exotic Species

Project Actions: MCAS Beaufort will implement its invasive and exotic plant control plan.

Tasks:

1) Control invasive plants on MCAS Beaufort by implementing the invasive plant management report (Appendix C). This will involve combinations of pesticide applications, cutting, pulling, and prescribed fire.
2) Monitor the efficacy of treatment with observations and field notes; use more quantitative methods when necessary. Monitor both the reduction in invasive plants and the return of desired native plants.
3) Retreat where necessary to improve and maintain control. Use the monitoring to change techniques and methods as needed to effect control.
4) Prohibit the planting of Cogon Grass (*Imperata cylindrical*), *Tararix* sp., Chinese Tallow (*Triadica sebifera*), Mimosa (*Albiza julibrissin*), Chinese//European Privet (*Ligustrum sinense/L. ulgare*), Kudzu (*Pueraria Montana*), Chinese Wisteria (*Wisteria sinensis*), Japanese Wisteria (*Wisteria floribunda*), and Tropical Soda Apple (*Solanum viarum*) anywhere on the installation. Revise any existing contracts to reflect this and review any new contracts and site plans to preclude planting of these species.
5) In developed areas of the Installation search for and remove any current Cogon Crass or Tropical Soda Apple no later than the end of calendar year 2007. Also, gradually remove any ornamental plantings of the other species listed in task 4 as they die out or grow too large for their location. Replace all removed plants with appropriate native plants.
6) Control fire ants through approved methods and partner with state and federal agencies to use biological control when feasible.

Drivers: 7 USC 2814, EO 13112, DoD Directive 4715.3.D.2.h

Goal(s): 3, 5, 8

Time Frame: Control and monitoring have started. Retreatment will be as necessary after inspection by the Natural Resources Manager. Restrictions on plantings are effective from the date of approval of this document. The gradual replacement of invasive species in developed areas will occur over the life of this document or longer.

Funding: Environmental Compliance

Regulatory Approval: Pesticide use is approved by NAVFAC EFD SOUTH's Applied Biology section.

Implementation Vehicle: Contract

Priority: 1

Measure of Success: Follow-up surveys will establish level of reduction of exotic and invasive plants and re-establishment of native species.

PROJECT DATA SHEET #6

Project Title: Forest Product Sales

Project Actions: Harvest timber as described in Appendix D to maintain an even distribution of forest age classes, an open canopy, suitable conditions for continued growth of the timber, and provide forest products to the local economy. This may include regeneration of new stands.

Drivers: 10 USC 265; 16 USC 670; DoD Directive 4715.3

Goal(s): 6, 8

Time Frame: Continuous, as needed

Funding: Forestry (Most, if not all, harvest will make money that will be utilized for forest and other natural resource management in accordance with existing laws and regulations.)

Regulatory Approval: Not required

Implementation Vehicle: By contract with help from NAVFAC, SE

Priority: 2

Measures of Success: Continuous Forest Inventory; post harvest evaluations by Installation and NAVFAC, SE personnel.

PROJECT DATA SHEET #7

Project Title: Fire Management

Project Actions: Prescribed burn pine stands, including wetland inclusions, in a manner that mimics historical fire regimes to achieve a reduced understory and fuel loads. Burn as much as feasible each year so that over 10 or more years an average of one third to one half of the stands are burned each year. This includes obtaining and maintaining needed equipment, training, certifications, and maintaining fire breaks and forest roads.

Drivers: 16 USC 670; 16 USC 703-712; 16 USC 2901; DoD Directive 4715.3,

Goal(s): 3, 4, 5, 6, 8

Time Frame: Continuous.

Funding: Forestry.

Regulatory Approval: Burn Permit Required from State Forestry Department

Implementation Vehicle: Installation Personnel; Contract if necessary

Priority: 2

Measures of Success: Yearly acreage burned; condition of forest stand midstory, understory, shrub, and herbaceous layers.

PROJECT DATA SHEET #8

Project Title: Forest Protection

Project Actions: Forest protection will include surveillance for insect and disease problems; evaluation of those problems, and treatment when necessary. The normal treatment is harvest of affected trees along with a buffer area. Forest protection also includes the protection of scenic values during harvesting of trees as described in Appendix D.

Driver: 10 USC 265; 16 USC 670; DoD Directive 4715.3

Goal(s): 6, 8

Time Frame: Continuous

Funding: Forestry.

Regulatory Approval: None.

Implementation Vehicle: Contract.

Priority: 2

Measure of Success: Acreage of trees affected each year.

PROJECT DATA SHEET #9

Project Title: Forest Inventory

Project Actions: Update the forest management inventory system with measurements of the forest such as species, acreage, size class, basal area, volume, etc.

Drivers: 10 USC 265; 16 USC 670; DoD Directive 4715.3

Goal(s): 6, 8

Time Frame: Complete survey forest stands in 2011; update small changes as the occur; resurvey forest stands in 2021.

Funding: Forestry.

Regulatory Approval: None.

Implementation Vehicle: Station Personnel, NAVFAC SE, Contract.

Priority: 2

Measure of Success: An up to date forest management inventory system.

PROJECT DATA SHEET #10

Project Title: Timber Stand Improvement.

Project Actions: This includes prescribed fire described in the Fire Management Project and a variety of techniques such as mechanical thinning and selective herbicide use that are occasionally used to increase the production of timber stands. Other than prescribed fire, timber stand improvements will only be used as a last resort or on stands so low in merchantable timber as to be considered non-stocked.

Drivers: 16 USC 670, 16 USC 2901, DoD Directive 4715.3

Goal(s): 6, 8

Time Frame: As needed.

Funding: Forestry.

Regulatory Approval: None

Implementation Vehicle: Inhouse or contract as deemed appropriate.

Priority: 2

Measure of Success: Monitoring projects.

PROJECT DATA SHEET #11

Project Title: Nongame management.

Project Actions: Conduct habitat improvement actions for a variety of species, especially BCCs and species identified in South Carolina's CWCS.

Tasks:

1) Purchase or construct nest boxes. Many boxes and plans are available either locally or on the internet. (Use any search engine and search for "bird nest boxes"). More information on bird houses is available online at: http://library.fws.gov/Bird_Publications/house.html and specifically for purple martins at: http://www.purplemartin.org
2) Place purple martin boxes only at Laurel Bay and on lawns away from building. Place other nest boxes on the sides of trees in the forested areas. Purple martin boxes should be about 15 feet high and about 40 feet or more away from any buildings.
3) Maintain the nest boxes.
4) Construct brush piles from timber slash.
5) Plant food plots in areas that will not conflict with BASH management.
6) Maintain forest stands in conditions conducive to BCCs and priority species from South Carolina's CWCS.
7) Monitor specific elements to evaluate the effectiveness of management.

Drivers: 16 USC 670, 16 USC 2901, DoD Directive 4715.3

Goal(s): 6, 8

Time Frame: Continuous

Funding: O&M, Ag Outlease, Forestry Reserve Funds

Regulatory Approval: None

Implementation Vehicle: Inhouse or contract as deemed appropriate.

Priority: 3

Measure of Success: Maintaining biodiversity of Installation as shown by monitoring .

PROJECT DATA SHEET #12

Project Title: Migratory Bird Surveys

Project Actions: MCAS Beaufort will continue to monitor migratory birds annually by completing surveys during the breeding season with an emphasis on painted buntings and winter surveys for grassland sparrows.

Tasks:

1) Utilize federal or local biologist to conduct point counts directed specifically at painted buntings. Provide this data to the Eastern Painted Bunting Working Group.
2) Conduct searches for winter grassland sparrows the year following burns in open pine stands with a grass/forb ground cover.
3) Identify and count (to the extent practicable) any migratory birds that are unavoidably taken during military readiness activities. Report these takings up the chain of command. (Note that taking is defined as kill, harm, or harass.)

Drivers: 16 USC 703; 16 USC 670, DoD Directive 4715.3; EO13186; Public Law 107-314, Section 315

Goal(s): 7, 8

Time Frame: Conduct point counts and other bird surveys yearly. Count take of migratory birds as it occurs.

Funding: O&M

Regulatory Approval: None.

Implementation Vehicle: Installation personnel, NAVFAC SE personnel, or contract.

Priority: 1

Measure of Success: Diversity of birds maintained on installation and number of bird strikes.

PROJECT DATA SHEET #13

Project Title: Monitor and Maintain Pondberry (*Lindera mellisifolia*).

Project Actions: MCAS Beaufort will monitor pondberry. The number of sites and stems for pondberry on MCAS Beaufort should remain within historical data or increase; the amount of flowering and fruiting should remain within historical data or increase.

Tasks:

1) Monitor pondberry at least twice yearly as described in the biological assessment.
2) Try different fire techniques or other possible management actions, after consulting with the USFWS to increase flowering and fruiting of the plants.
3) Prescribed burn the pine stands with pondberry on a 3-5 year basis.
4) Review results of surveys and management yearly with cooperating agencies and improve management as necessary to maintain the species.

Drivers: 16 USC 1531-1543, 16 USC 670

Goal(s): 7, 8

Time Frame: Continuous, 2-3 surveys yearly.

Funding: Environmental Compliance, Class I

Regulatory Approval: Required from FWS.

Implementation Vehicle: Contract

Priority: 1

Measures of Success: Size and vigor of existing populations.

Comtrack #: BE02011

PROJECT DATA SHEET #14

Project Title: Other Rare, Threatened and Endangered Species Surveys

Project Actions: MCAS Beaufort will survey and monitor wood storks, bald eagles, and other listed species on the Station.

Tasks:

1) Look for new bald eagle nest each year during December or January.
2) Look for nesting wood storks each summer.
3) Check out suspected bat roost trees for the presence of the two state listed bat species.
4) Conduct surveys for Schwalbea chaffseed and Canby's cowbane following prescribed burning in appropriate habitat.
5) Conduct other surveys as needed after consulting with cooperating federal and state biologist.
6) Conduct other species surveys at same time when economical.
7) Review results of surveys yearly with cooperating agencies and improve management as necessary to maintain the species.

Drivers: 16 USC 1531-1543, 16 USC 670

Goal(s): 7, 8

Time Frame: Continuous

Funding: O&M

Regulatory Approval: None

Implementation Vehicle: In house and in cooperation with USFWS and SCDNR.

Priority: 1

Measure of Success: Completion of surveys.

PROJECT DATA SHEET #15

Project Title: Manage Small Game.

Project Actions: Allow harvest of small game in accordance with SCDNR regulations except that duck, and turkey will not be harvested. Hunting may be further restricted to maintain safety and security. Manage small game habitat by prescribed fire and timber management that provides habitat for small game in an ecosystem management setting. Utilize other small game practices (brush piles, food plots, nest boxes, etc.) as time, funding, and volunteer help permit.

Tasks:

1) Conduct small game hunts in accordance with SCDNR regulations in a manner compatible with Installation security and safety considerations.
2) Plant food plots in areas that will not conflict with BASH management.
3) Prescribed burn the pine stands on a 3-5 year basis, but burn some pine stands more frequently to promote Northern Bobwhite.
4) Construct brush piles from timber slash with volunteer labor. Also utilize the half-cut technique to create cover.
5) Maintain forest stands in conditions conducive to Northern Bobwhite.
6) Keep records of all game taken.
7) Review results of surveys and management yearly with cooperating agencies and improve management as necessary to maintain the species.

Drivers: 16 USC 670; 16 USC 703-712; 16 USC 2901; DoD Directive 4715.3,

Goal(s): 3, 5, 7, 8

Time Frame: Burn pine stands every 3 to 5 years. Conduct hunts yearly.

Funding: Forestry, O&M, Environmental Compliance

Regulatory Approval: Burn Permit Required from State Forestry Department; Consultation with USFWS.

Implementation Vehicle: Installation Personnel; Contract if necessary

Priority: 1

Measures of Success: Condition of pondberry as measured by project 14.

Comtrack #: BE02009

PROJECT DATA SHEET #16

Project Title: Manage Deer

Project Actions: Conduct habitat improvement actions for deer and allow hunting to the extent that they can sustain the take.

Tasks:

1) Conduct deer hunts in accordance with SCDNR regulations in a manner compatible with Installation security and safety considerations.
2) Plant food plots in areas that will not conflict with BASH management.
3) Maintain forest stands in conditions conducive to deer production through stand thinnings and prescribed fire.
4) Conduct deer hunts in accordance with SCDNR regulations in a manner compatible with Installation security and safety considerations.
5) Keep records of all deer taken.
6) If necessary, utilize depredation permits and shoot deer around runways to prevent deer / aircraft collisions.

Drivers: 16 USC 670, DoD 4715.3

Goal(s): 2, 6, 7, 8

Time Frame: Continuous, all hunts in accordance with SCDNR seasons and regulations.

Funding: O&M

Regulatory Approval: All hunting and depredation conducted in accordance with SCDNR regulations.

Implementation Vehicle: Station personnel, Natural Resources Manager, Installation Conservation Officer, SCDNR assistance

Priority: 1

Measures of Success: Monitor number of deer around airfield with night-light counts. Monitor herd health by collecting appropriate biological data from harvested deer. Monitor outdoor recreation by questionnaires of hunters and number of deer hunting days.

PROJECT DATA SHEET #17

Project Title: Conduct BASH Program.

Project Actions: Continue the MOA with APHIS to provide personnel for BASH management. Monitor the airfield and adjacent areas to spot and prevent problems before damage occurs. Utilize all available methods to drive wildlife that is hazardous to aircraft away from the airfield after obtaining any required permits from the USFWS and SCDNR.

Tasks:

1) Conduct night light surveys around airfield biweekly. Keep records of life stage (adult or fawn), sex , and number of points.
2) Conduct point counts at the 13 existing points around the runways as necessary, but no less than monthly, to determine potential bird hazards.
3) Maintain records of all migratory birds taken as a result of military readiness activities and from depredations to prevent bird strikes. Maintain records of all deer taken to prevent deer strikes.
4) Obtain required permits necessary to conduct operations.
5) Whenever hazardous wildlife situations occur, use appropriate techniques to drive birds away from airfields.

Drivers: 16 USC 670; DoD Directive 4715.3

Goal(s): 2

Time Frame: Continuous

Funding: O&M

Regulatory Approval: USFWS and SCDNR depredation permits required.

Implementation Vehicle: MOA with APHIS

Priority: 1

Measure of Success: Number and severity of bird strikes. Number and kinds of birds encountered during airfield bird surveys. (Note that reported bird strikes may actually increase following implementation of the plan since the increased awareness of personnel will lead to better reporting.)

PROJECT DATA SHEET #18

Project Title: Prevent Other Wildlife Damage and Disease

Project Actions: MCAS Beaufort will prevent human/wildlife health conflicts by proper garbage handling and by either preventing problems before they occur or handling problems as soon as they occur through the use of appropriate assistance.

Tasks:

1) Make all putrecible garbage unavailabe to raccoons, rats, opossums, armadillos, etc. so their populations are not artificially increased.
2) To control feral cats on the installation, implement Armed Forces Pest Management Board Technical Information Memorandum 41, Guidelines for Reducing Feral/Stray Cats on Military Installations in the United States (located at: http://www.afpmb.org/pubs/tims/tim37.htm).

Drivers: 16 USC 670; DoD Directive 4715.3

Goal(s): 8

Time Frame: Continuous

Goal(s): O&M

Regulatory Approval: USFWS and SCDNR depredation permits may be required.

Implementation Vehicle: Station Personnel, Contract

PROJECT DATA SHEET #19

Project Title: Provide Fish Pond Access

Project Actions: Maintain and improve existing recreational freshwater fishing opportunities at MCAS Beaufort by repairing the existing fishing piers and constructing new ones. Make the piers ADA compliant where feasible. Keep brush around the ponds cut back so that between 15% and 35% of the banks are accessible for fishing.

Tasks:

1) Repair piers and boat ramps as needed.
2) Check on use of piers and boar ramps during other work, add new piers and boat ramps if the need exists.
3) Cut brush back from banks of ponds when it starts limiting access for bank fishing.

Drivers: 16 USC 670 , EO 12962

Goal(s): 6

Time Frame: Continuous

Funding: O & M

Regulatory Approval: Fishing will be in accordance with SCDNR regulations.

Implementation Vehicle: In house, cooperating agencies & contract.

Priority: 2

Measure of Success: Fishing hours, harvest, and population balance.

PROJECT DATA SHEET #20

Project Title: Fish Pond Management

Project Actions: Maintain and improve existing recreational freshwater fishing opportunities at MCAS Beaufort by ensuring the availability of freshwater fisheries through stocking, fertilization, weed control, harvest restrictions, and monitoring programs in fish ponds.

Tasks:

1) The Conservation Officer will conduct creel checks of persons fishing at the Installation fish ponds.
2) Request, as needed, visit/s from SCDNR fisheries biologist or other public or private fisheries biologist for analysis of fish ponds.
3) Monitor pond fertility and other water quality measures. Lime and fertilize Scout and Round Island Ponds when needed.
4) Install fish feeders and feed catfish at all ponds.
5) Maintain the existing aeration system at Scout and Round Island Ponds.
6) Based on creel checks and other collected information, restrict bass harvest as necessary to maintain a balance between bass and bluegill so that too many bluegill do not become a problem.
7) Conduct other fish pond management such as stocking and weed control after consulting with SCDNR biologist.

Goal(s): 6

Time Frame: Continuous

Funding: O & M

Regulatory Approval: Fishing will be in accordance with SCDNR regulations.

Implementation Vehicle: In house, cooperating agencies & contract.

Priority: 2

Measure of Success: Fishing hours, harvest, and population balance.

PROJECT DATA SHEET #21

Project Title: Conduct Recreational Hunting and Fishing Program.

Project Actions: Implement projects entitled Manage Game Species, Provide Fish Pond Access, and Fish Pond Management in a manner that maximizes outdoor recreation opportunities for Installation personnel and their dependents.

Tasks: Provided in Projects entitled Manage Game Species, Provide Fish Pond Access, and Fish Pond Management.

Drivers: 16 USC 670, EO 12962

Goal(s): 6

Time Frame: Continuous with yearly funding.

Funding: O&M, Ag Outlease

Regulatory Approval: None

Implementation Vehicle: In house, NAVFAC SE, Contract, Cooperators

Priority: 3

Measure of Success: Hunter days; harvest data.

PROJECT DATA SHEET #22

Project Title: Provide Non-consumptive Nature Observation Opportunities

Project Actions: Maintain woods roads and nature trails to allow passive outdoor recreation such as walking, jogging, bird watching, etc.

Tasks:

1) Maintain woods roads and trails. Upgrade and add signage to improve interpretive opportunities.
2) Maintain the Boy Scout camping area at Scout Pond.
3) Add picnic area and information kiosk at Round Island Pond.
4) Add picnic tables in administrative areas for lunch breaks.
5) Add additional picnic tables around the log cabin community center.
6) Maintain boat ramps and fishing/observation piers/platforms.
7) Make all of these facilities Americans w/ Disabilities Act (ADA) compatible by making all new facilities ADA compatible and upgrading one old facility every other year.

Drivers: ADA, 16 USC 670

Goal(s): 6

Time Frame: 2002-2010

Funding: O&M

Regulatory Approval: None

Implementation Vehicle: Contract or volunteer labor.

Priority: 1

Measure of Success: Visitor Recreation days.

PROJECT DATA SHEET #23

Project Title: Natural Resource Public Outreach

Project Actions: Provide Installation personnel, dependents, and the public with information about the recreational and other natural resources available at MCAS Beaufort to further cooperation and understanding between the community, Station personnel and MCAS Beaufort regarding the management of the Station's natural resources.

Tasks:

1) Utilize the Station newspaper, handouts, brochures, and other means to inform Installation personnel and their dependents of the outdoor recreation resources available on the Installation.
2) Hunter safety course.
3) Conduct other public outreach such as Earth Day, National Migratory Bird Day, and Christmas Bird Counts.

Drivers: 16 USC 670, EO 12962

Goal(s): 6, 7

Time Frame: Continuous

Funding: O&M

Regulatory Approval: None

Implementation Vehicle: In house

Priority: 3

Measure of Success: Number of events and participants.

Comtrack #: BE02005

PROJECT DATA SHEET #24

Project Title: Natural Resources Staffing

Project Actions: Maintain adequate staffing levels for implementing the INRMP. Staffing will include:

1) Natural Resources and Environmental Affairs Officer (Oversees all environmental programs on the Installation).
2) Natural Resources Manager (Natural Resources Professional with direct responsibility for the Natural Resources Program.)
3) Conservation Officer (Federal Law Enforcement school trained biologist responsible for natural resources law enforcement duties on MCAS Beaufort and assisting with other natural resources management on an as needed/as available basis.)
4) BASH specialist (Currently APHIS employees assigned to work on MCAS Beaufort with responsibility for keeping bird and deer strikes at a minimum.)
5) Forestry technician responsible for prescribed burning and mechanical control of understory vegetation.
6) Specific tasks, such as spraying herbicides to kill invasive plants, can be performed by contract personnel under the direction of the actual federal employees listed above.

Drivers: 16 USC 670, DoD Directive 4715.3

Goal(s): 6, 8

Time Frame: Ongoing.

Funding: Operations, Environmental Compliance, O&M, Forestry

Regulatory Approval: None

Implementation Vehicle: In house

Priority: 1

Measure of Success: Successful implementation of INRMP.

PROJECT DATA SHEET #25

Project Title: Natural Resources Training

Project Actions: Provide natural resources personnel with proper training/certifications for programs identified in this INRMP and provide information regarding natural resources laws and nature in general to Installation personnel and their dependents.

Tasks:

1) Provide training to the Station's Natural Resources Manager, Conservation Officer and other staff yearly. Training will be directed at military requirements, legal requirements, and natural resources science.
2) Train other Station personnel regarding the protection, uses, and benefits of natural resources. Examples of training include:
    i. Newspaper articles.
    ii. Informational brochures and bookmarks.
    iii. Displays and kiosk
    iv. Nature trail signage.
    v. Hunter safety course.

Drivers: 16 USC 670, DoD Directive 4715.3

Goal(s): All

Time Frame: Train staff at least one week yearly; the public outreach training is continuous.

Funding: Environmental Compliance, O&M, Forestry

Regulatory Approval: None

Implementation Vehicle: Contract, NAVFAC SE

Priority: 1

Measure of Success: Amount of training provided; continued success of natural resources program.

PROJECT DATA SHEET #26

Project Title: INRMP Review

Project Actions: MCAS Beaufort will review the plan annually with the signature agencies.

Tasks:

1) Review the plan annually with the signature agencies for effectiveness and implementation. NAVFAC SE will help with this if requested to do so.
2) Following the annual review, update the INRMP by making changes to the INRMP as determined at the annual review.
3) Update the project tables and budget request computer site and notify HQMC of any changes in required funding.

Goal(s): All

Time Frame: Yearly

Funding: O & M

Regulatory Approval: Completed in full cooperation with signature agencies.

Implementation Vehicle: In house, cooperating agencies & contract.

Priority: 1

Measure of Success: Completed annual reviews.

Comtrack #: BE68350

PROJECT DATA SHEET #27

Project Title: Renew INRMP

Project Actions: MCAS Beaufort will renew the plan every 5 years. Complete rewrites may not be necessary if annual reviews have been conducted and the plan updated each year.

Tasks:

1) During the fourth annual review with the signature agencies, determine if a rewrite is necessary or if minor changes will suffice.
2) Update the project table to be sure projects are scheduled for at least the next five years.
3) If a complete rewrite is not necessary, make only the changes determined in the annual review and circulate the plan to appropriate parties for signature.
4) If a complete rewrite is necessary, initiate rewrite in full cooperation with the signature agencies.

Goal(s): All

Time Frame: Yearly

Funding: O & M

Regulatory Approval: Completed in full cooperation with signature agencies.

Implementation Vehicle: In house, cooperating agencies & contract.

Priority: 1

Measure of Success: Completed annual reviews.

Comtrack #: BE68350

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APPENDIX B

OBJECTIVES

APPENDIX B – OBJECTIVES FROM CHOSEN ALTERNATIVE
(ACCOMPLISHMENT OF THE FOLLOWING OBJECTIVES IS SUBJECT TO THE AVAILABILITY OF FUNDING AND PERSONNEL.)

OBJECTIVES	
STATION-WIDE:	
1.	Prescribe burn pine and pine/hardwood stands tri-annually while trying to mimic natural fire regimes.
2.	Control invasive species throughout the Installation.
3.	Evaluate pine stands for conversion to longleaf pine; initiate conversion on 10-20% of identified areas by end of planning period while balancing age class distributions.
4.	Evaluate mixed pine-hardwood stands for conversion to maritime forest or pine stands; make changes when rotation age is achieved for each stand.
5.	Maintain records and collect data of fish & wildlife based outdoor recreation to determine desired and needed activities.
6.	Provide fish & wildlife based outdoor recreation, including hunting, appropriate to the present resource base and compatible with military use of the Installation.
7.	Upgrade, refurbish, or replace at least one recreation facility every other year (when funding is available). Each improved facility will be made accessible to the handicapped.
8.	Determine species richness and diversity Installation wide and by area of the Installation so biodiversity can be monitored and maintained. Maintain the Installations contribution to regional biodiversity by conserving rare habitats and species.
9.	Determine indicator species or criteria for future monitoring of management actions.
10.	Maintain populations of all animals appropriate for the local area, habitats, and size of the Installation; maintain average or better populations for species determined to be declining in the region.
11.	Monitor the deer herd through collection of information from harvested deer supplemented with other studies as recommended by the State.
12.	Monitor, maintain, and provide a conservation benefit for listed species on MCAS Beaufort.
13.	Utilize bird and bat houses at Laurel Bay to increase populations of mosquito eating birds and bats; utilize bird and bat houses on the Main Station to increase populations of forest dwelling species.

OBJECTIVES	
14.	Protect soils and wetlands through the use of state best management practices during forestry operations.
15.	Protect wetland and water quality using a variety of techniques such as storm water retention/detention, buffer strips, and best management practices.
16.	Mineral resources controlled by the Installation will not be sold or extracted.
17.	On most available land, produce a sustained yield of commercial timber products from native species in a manner consistent with ecosystem management.
18.	Divide up large forest stands into smaller stands to even out harvest and age structure.
19.	Implement beneficial landscaping and grounds maintenance practices to reduce erosion, prevent invasive species introductions into unimproved areas, and improve wildlife habitat.
AIRFIELD:	
20.	Maintain airfield clear zones free of shrubs and trees and airfield grass between 7 and 14 inches high (or as recommended by the Naval Safety Center).
21.	Conduct bird surveys to evaluate bird strike hazards daily.
22.	Conduct deer surveys to evaluate deer hazards monthly or more frequently as determined on site by the NREAO.
23.	Test various management schemes in the woods around the airfield for impacts on the number of deer using the airfield.
24.	Control the deer herd through hunting and other legal means to keep deer away from the runways and taxiways.
AGRICULTURAL OUTLEASE LANDS:	
25.	Continue return of these lands to wetlands.
26.	Grazing or other use of farm animals will not be allowed.
27.	Reduce the probability of the wetland creating a BASH problem.

OBJECTIVES

AICUZ LAND:	
28.	Continue to evaluate conditions of existing forest and non-forested areas. Develop and implement plans to convert areas into productive and diverse forestlands with commercial crops of timber and diverse wildlife resources.
29.	Survey and mark boundaries of Marine Corps property. Set up schedule to survey, maintain and mark 10% of property boundaries each year.
FISH PONDS:	
30.	Maintain balanced bass and bluegill populations for recreational fishing.
31.	Maintain pond fertility along with other physical and chemical properties of the pond within limits suitable for fish and other naturally occurring aquatic organisms.
32.	Implement fertilization and liming program to increase pond productivity and fishing opportunities.
33.	Monitor and control recreational fishing sufficiently to maintain balanced fish populations.
34.	Monitor ponds for noxious aquatic weeds and eliminate these plants from the ponds should they occur in the ponds.
35.	Continue implementing a program to remove brush from the banks of the fish ponds to increase access for fishing.
36.	Improve fish habitat through the use of techniques recommended by fisheries biologist from cooperating agencies.

APPENDIX C

BASH PLAN

(AIR STATION ORDER 3750.6A)

ORIGINAL

UNITED STATES MARINE CORPS
MARINE CORPS AIR STATION
BEAUFORT, SOUTH CAROLINA 29904-5001

ASO 3750.6A
NREAO/DSS
0 2 MAR 2010

AIR STATION ORDER 3750.6A

From: Commanding Officer, Marine Corps Air Station Beaufort
To: Distribution List

Subj: BIRD-AIRCRAFT STRIKE HAZARD (BASH) REDUCTION PROGRAM

Ref: (a) OPNAVINST 3750.6Q
(b) OPNAVINST 5090.1
(c) OPNAVINST 6250.4
(d) ASO P3710.2S AOM

Encl: (1) General Guidelines for Specific Hazard Control
(2) Bird/Animal Watch Conditions (BAWC)
(3) Reporting and Bird/Animal Strike Bag Form
(4) BASH Land Management Procedures

1. Situation. A Bird/Wildlife-Aircraft Strike Hazard exists at Marine Corps Air Station (MCAS) Beaufort due to resident and migratory bird species in the vicinity. Daily and seasonal bird movements create various hazardous conditions with the peak period starting in October and ending in May. In addition, mammals, i.e., white-tailed deer, pose a hazard to aviation safety. No single solution exists to the BASH problem, so a variety of techniques and organizations are involved in the control program.

2. Cancellation.

3. Mission. It is the policy of this Command to provide an aggressive BASH program and coordinate the efforts of the various departments and tenant units in an effort to reduce wildlife strikes.

4. Execution

a. Commander's Intent and Concept of Operations

(1) Commander's Intent. That all commands operating at MCAS Beaufort comply with this order and the references in order to ensure that the risks associated with Bird-Aircraft Strike Hazards are minimized.

(2) Concept of Operations. This order applies to all units aboard MCAS Beaufort responsible for the administration of the BASH program. Enclosure (1) gives guidelines for specific hazard control. Enclosure (2) establishes local BAWC. In order to track and identify specific bird species which have been killed by an aircraft strike, all remains are to be bagged and tagged utilizing enclosure (3). The bag will then be forwarded to Natural Resources Environmental Affairs Office. The remains along with a copy of the WESS report will then be sent to the Smithsonian Institution for identification. Enclosure (4) is land management procedures.

b. Subordinate Element Tasks

(1) The administration of the BASH Reduction Plan is the responsibility of the Department of Safety and Standardization. A Bird

Hazard Work Group (BHWG) will be established as a committee of the MCAS Aviation Safety Council. The Group will consist of the following representatives: Director of Safety and Standardization Department MCAS (Chairman), Airfield Operations Department S-3, Logistics Department S-4, Natural Resources Environmental Affairs Office S-4 (Recorder), Public Works Division S-4, and Marine Aircraft Group 31. The Group will meet as directed by the Aviation Safety Council Chairman. The Group will review data on wildlife strikes and recommend actions to reduce the hazard to include changes in operational procedures if necessary. Outside wildlife agencies may be asked to participate and provide information to the Group.

c. S-3 Airfield Operations Officer

(1) Ensure the Air Traffic Control section is tasked with keeping Airfield Operations informed of bird watch conditions based on information received by airborne or ground observations. They will also make the necessary operational changes to avoid areas and times of known bird concentrations, mission permitting.

(2) Declare, disseminate, and terminate bird watch conditions on the Air Station.

(3) Ensure bird watch conditions are displayed with weather information.

(4) As required, activate and direct the Bird Reaction Team (BRT) to a specific sites for bird-deterrent operations.

(5) Ensure Aircraft Rescue and Firefighting (ARFF) and all air and ground crews are tasked with reporting to the Airfield Operations Office any bird activity while in a watch condition. The recovery of bird strike remains will be forwarded to MCAS NREAO, see enclosure (3).

d. S-4 Logistics Officer:

(1) Ensure Natural Resources Environmental Affairs Office (NREAO) is tasked with the budgetary and logistical support requirements for the BASH program. The NREAO will receive bird strike remains and a copy of the Web Enabled Safety System report for analysis of species type. All remains will be sent to The Smithsonian Institute for identification. NREAO will determine appropriate action to be taken to reduce bird activity on the airfield and provide this information to the appropriate departments.

(2) Monitor and advise the (BHWG) of environmental modifications.

(3) Develop procedures for removal or control of bird attractants.

(4) Initiate surveys and write environmental impact assessments and statements as required.

(5) Conduct BASH surveys and report findings to the BHWG and flying units.

(6) Use land management practices that reduce potential BASH problems per enclosure (4).

(7) Modify airfield habitat consistent with runway lateral and approach zone management criteria. Reduced habitat conditions beyond the 1000' distance criterion is desired and will further reduce potential BASH problems per enclosure (1).

(8) Ensure the NREAO report on BASH activities are forwarded to higher headquarters and include BHWG recommendations and actions.

(9) The Public Works Officer shall ensure that the MCAS Maintenance Service Provider's (Contractor) Pest Control Technician is available for operational use on insect control around the airfield during the bird strike hazard period.

e. Public Affairs Office (PAO)

(1) Publicize the BASH Program with continuous updates of articles on the bird condition at the Air Station from October through May.

(2) Provide photographic services to document bird strikes and related activities as required.

5. Administration and Logistics. The Commanding Officer of MAG-31 and all other tenant units aboard this installation concur with this order insofar as it pertains to members of their command.

6. Command and Signal. This order is effective immediately and is applicable to all tenant units aboard MCAS Beaufort.

J. R. SNIDER

GENERAL GUIDELINES FOR SPECIFIC HAZARD CONTROL

1. The following is a summary of specific wildlife strike hazards and recommendations for reducing each hazard to flight operations. An integrated wildlife damage management (IWDM) approach is preferred utilizing non-lethal and lethal methods. A brief description of each bird and how each species can be controlled or avoided is included. Each control measure will require action by one or more tasked organizations as described in the basic plan. All necessary Federal and State permits should be secured prior to conducting any lethal control. Wildlife "taken" will need to be recorded and reported to NREAO. Other wildlife agencies may be called upon for assistance. It is very important to know which species is present before control techniques are most effectively applied. An appropriate field guide should be used to aid in bird identification.

a. Loons, grebes, pelicans, cormorants, mergansers. These are fish-eating birds. Control is best accomplished by removing fish-producing ponds near the airfield. Removal of the food source is not always possible, though pyrotechnics can be used to effectively frighten the birds from the area. Avoid flying at sunrise and sunset when large flocks, often in formation, can be found flying to and from feeding areas.

b. Herons and Allies(herons, egrets, ibises, storks). Most of these species are attracted to water where they feed on fish, amphibians, reptiles and arthropods. Control is best accomplished by eliminating the food sources (i.e. temporary standing water on the airfield) and roost sites. Steeping the sides of ditches and ponds and removing emergent vegetation will drastically reduce accessibility to food sources. Pyrotechnics and other frightening devices should be used to disperse any birds. (Note: Wood storks are a Federally and State Endangered species in South Carolina.)

c. Cattle Egrets. These birds have different feeding habits than their relatives, preferring open fields where they primarily feed on insects. They frequently follow mowers for the insects which are stirred up. Mowing should be accomplished during non flying hours when cattle egrets are present. Grass should be maintained between 7-14 inches. Periodic pesticide application may be necessary for insect control. Roost sites should be eliminated on or near base by removing or thinning roost trees and brush and dispersing the birds utilizing various harassment techniques.

d. Waterfowl (ducks, geese, swans). A distinction must be made between resident and migrating populations.

(1) Resident waterfowl are attracted to an area to breed or feed. Ponds, lakes, ditches, temporary standing water etc., may attract these birds, particularly if these areas contain emergent or submerged vegetation for feeding, nesting, or shelter. Steepening ditch and pond banks and removal or exclusion of attractive wildlife habitat will reduce waterfowl numbers. When possible, drainage of water sources should be accomplished. Grain fields may also attract waterfowl in large numbers and should be eliminated. Pyrotechnics, lasers, sirens and other harassment techniques can be utilized to disperse birds.

(2) Migratory waterfowl are winter residents in South Carolina and are interspersed with resident populations during the fall and winter months.

Hazing waterfowl is effective and may need to be reinforced with lethal control.

e. Blackbirds/Starlings. Both of these species of bird have flocking tendencies. Blackbirds will roost in ditches or cattails near water and will feed in the open areas. Starlings will feed in the open fields with short grass and roost together in tight spaces (i.e. buildings). Removing the vegetation in and around ditches on the airfield will help keep the blackbird numbers down while various harassment techniques will be helpful in dispersing both of the species.

f. Shorebirds and gulls (plovers, sandpipers, killdeer). Most of these birds are migratory and will appear more numerous from October through May. Persistent harassment is critical in dispersing these birds. Sirens, propane cannons, pyrotechnics and flashing lights can be used in combination. Gulls have a tendency to be attracted to airfields when temporary pools of water form after periods of rain. Elimination of standing water may be necessary. Gulls also have a tendency to habituate rather quickly to harassment (pyrotechnics and distress call tapes) and several individual birds may need to be taken to reinforce the non-lethal control.

g. Pigeons (Rock dove). These birds are an aviation and a health hazard. The pigeons roost and nest in man made structures (i.e. hangars) and the droppings create a health and FOD risk. Local population reduction (trapping and shooting) along with excluding birds from roost/nest sites can reduce the hazard.

h. Vultures, Hawks, and Falcons. These are predatory birds and scavengers that are attracted to open spaces with abundant insect and small mammal populations, roosting structures and perching structures. Habitat modifications; specifically vegetation, structures, and prey base management will have profound effects. Hazing can be used to deter birds. Trapping/ relocation and lethal control may be necessary.

i. Perching birds (swallows, larks, crows). Pyrotechnics combined with periodic shooting is effective in moving these birds from one area to another, but needs to be conducted persistently. Visual repellents especially; raptor kites, and stretched Mylar tape will add to the effectiveness of hazing.

j. Mammals (deer, feral dogs, etc.). The habitat around the airfield is conducive to harboring most of these species. Fencing is the best long term management strategy along with elimination of vegetation especially in and around drainage ditches on the airfield. Dispersal of animals from critical areas provides short-term relief. Before initializing a hazing action, the potential response of the animal should be considered because they may respond in an unpredictable manner when frightened. Legal harvest of White-tailed deer should be encouraged on the air station. Supplemental shooting may be necessary to reduce local populations. Feral dogs can be captured using catch poles or traps, both cage and foot-hold.

BIRD HAZARD CONDITIONS

The following terminology will be used for rapid communication of Bird Animal Watch Condition (BAWCs) Alert. Corrective actions with the below conditions are to be executed in accordance with reference (d).

1. Bird Hazard Condition (LOW). Reported Bird, Animal Activity on or around runways and taxiways is negligible, representing low potential for strikes.

2. Bird Hazard Condition (MODERATE). Bird, Animal activity has been observed on or around the active runway or other specific location representing increased potential for strikes. (Bird Guideline: 5-15 large birds or 15-30 small birds in locations, which represent a probable hazard to safe flying operations).

3. Bird Hazard Condition (SEVERE). Numerous birds, animal activities have been observed on or immediately around the active runway or other specific locations on the airfield representing high potential for strikes. (Bird Guideline: Heavy bird concentration (more than 15 large or 30 small birds) on or immediately above runways, taxiways, infield areas and departure and arrival routes).

REPORTING

1. All bird/animal wildlife strikes are required to be reported via the Web Enabled Safety System (WESS). Once the strike is reported, a copy of the WESS report and any remains collected will be forwarded to NREAO. Collection of remains, no matter how small, is the responsibility of the squadron and a bird remains collection kit has been supplied to each squadron ASO. NREAO is responsible for sending the remains and report to the Smithsonian Institution for DNA analysis. NREAO will keep a log of all strikes aboard MCAS Beaufort. If any assistance is needed in these procedures the wildlife biologist may be contacted at 228-7054.

Bird/Animal Strike Bag Form

MCAS Beaufort

1. _____
(Squadron /Reported by / Phone number)

2. _____
(Date and time of bird strike)

3. _____
(Location of incident, runway, pattern of flight)

4. _____
(Pilot of A/C, and phone number)

5. Brief Description of Incident: _____

_____

_____

_____

_____

6. Please attach this form to the bagged remains and forward to building 1036, Natural Resource Office, or call 228-7464 for analysis.

7. _____
(Date and time received by NREAO and initial)

8. Remarks: _____

_____

_____

_____

_____

BASH LAND MANAGEMENT PROCEDURES

1. Grass Height Management. Mowing operations shall maintain a uniform grass height between 7 and 14 inches. Mowing frequency will be as needed to maintain height requirements. Coordinate mowing with periods of low flight activity. Grass must be cut before it goes to seed to discourage seed-eating birds from utilizing the airfield. Long grass discourages flocking species from entering the airfield because reduced visibility disrupts inter-flock communication and flock integrity and also prevents predator detection. Grass normally should not exceed 14 inches, as high grass will attract some bird species and rodents, which in turn attract raptors. Airfields with a variety of grass species may have a fast growing strain, which reaches 14 inches sooner than the rest of the airfield. Mowing shall be conducted whenever the average grass height reaches 14 inches. Higher grass height may be allowed if the airfield has leased out property for hay production. Obtain assistance in herbicide selection for weed control, appropriate grass seed selection, fertilization and erosion control vegetation from the U.S. Soil Conservation Service or the Agricultural Extension Service.

2. Broad-Leafed Weed Control. Broad-leafed weeds will be kept to a minimum on the airfield. Application for herbicides, as necessary, will be accomplished to achieve this. Broad-leafed weeds attract a variety of birds, may produce seeds and berries and may limit grass growth.

3. Planting Bare Areas. Bare areas are frequently used by birds as resting sites and should be eliminated on the airfield. Grass shall be planted as necessary and appropriate irrigation maintained.

4. Fertilizing. Selectively stimulate grasses to promote a uniform cover. Irrigation may be required to support turf growth. Watering should be controlled to enhance root production and decrease seed head production.

5. Reducing Edge Effect. Edge effect refers to the highly attractive transition zone between two distinct habitat types (e.g., brush to grassland). The airfield shall be maintained as uniformly as possible to reduce this effect.

6. Leveling of Airfield. High and low spots on the airfield will be leveled or filled to reduce attractiveness to birds and prevent standing water.

7. Dead Vegetation. Dead brush piles, grass clippings, hay bails, etc., and the cover it affords will be removed as soon as possible.

8. Dead Birds and Other Animals. Dead birds and animals shall be removed from the field to avoid attracting vultures and other birds. Forward remains, which may have been caused by collision with aircraft for identification.

9. Pest Control. Invertebrates and rodents provide important food sources for many birds. Control of insects, earthworms, rodents, etc., through use of insecticides and rodenticides will be accomplished under the supervision of the Air Station's contracted Pest Control technician service provider. Control should begin early in the spring. This must be coordinated with the Integrated Natural Resources Management Plan (INRMP).

10. Drainage Ditches. Ditches shall be inspected regularly and kept clear and obstacle free. Ditch sides will be maintained as steeply as possible with a minimum slope ratio of 5:1 to discourage wading birds and emergent vegetation. Vegetation will be removed as often as necessary to maintain flow and discourage use by birds.

11. Elimination of Standing Water. Coordination with the Army Corps of Engineers and the appropriate state environmental permitting office is required prior to altering wetlands. Small ponds or puddles and some large standing bodies of water must be eliminated to reduce the attractiveness to birds. Low spot and ditch maintenance is essential.

12. Erosion Control Vegetation. Vegetation should be used which is appropriate for the region and supports BASH reduction philosophy, i.e., do not control erosion using plants which produce seeds at heights below 14-18 inches.

13. Agricultural Crop Out-Leasing. Out-Leasing of crops should be consistent with BASH reduction philosophy. Hay is a suitable crop for runway lateral and approach clearance zones when properly managed.

14. Eliminate Roosting Sites. Blackbird and Starling roosts will be controlled by vegetation management of roost sites where possible. Trees shall be pruned to reduce the number of perches available and entire trees or stands removed, if necessary.

15. Bird-Proof Buildings and Hangars

a. Pigeons, Sparrows and Starlings frequently enter into buildings and hangars and must be excluded. Denying access by screening windows, closing doors and blocking entry holes is most effective. When necessary, other methods should be considered.

b. Toxic Perches: Pest Control will survey bird roosting sites and install perches where maximum numbers of birds will contact them.

c. Pellet Guns: Shoot Birds for a short-term solution. Experience has shown that all birds cannot be removed using this technique. Proper safety equipment is required.

d. Netting: Install under superstructure to exclude pest birds from roosting areas. Ensure no gaps or holes are present for birds to get through.

e. Avitrol: Pest Control will place Avitrol in or near hangar to kill birds or create a distressed response, scaring others away.

f. Trapping/Removal: Use large cage with food, water and other birds to trap pest birds. Birds should be destroyed. Permits from the U.S. Fish and Wildlife Service and the state wildlife agency are required to kill protected birds.

g. Design Features: Consider structures with the support features located on the outside of the buildings to greatly reduce bird numbers. Consider this design when planning a new hangar.

h. Door Coverings: Use netting or plastic strips suspended over the doors to exclude birds. Ensure no tears or holes are present which allow bird's access to the hangar.

i. Sharp Projections: Use in limited areas such as ledges, overhangs, or small places where birds cannot be allowed. Expense prohibits their use over the entire structure.

j. Night Harassment: Use high-pressure air or water to make hangars an undesirable roosting site. Persistence is the key.

16. Other Animal Hazards to Aircraft. Use appropriate trapping methods for animals. Some species or individual animals may be removed by shooting. Coordinate with Natural Resources Environmental Office and obtain appropriate permits.

APPENDIX D

FOREST MANAGEMENT

(2012 data)

1. Introduction

This Appendix provides additional information regarding forest management. The actual forestry operations are implemented by the NREAO, installation personnel, NAVFAC SE, or by contractual services. Basic operations and general forest management are the responsibility of the NREAO. NAVFAC SE Natural Resources Section provides professional technical assistance such as preparing contract specifications, professional forestry consultation, setting up timber sales and updating computerized Forestry Geographical Information Systems. NAVFAC SE Real Estate provides support in the form of executing timber sale contracts, advertises, awards, and maintains records on forestry service contracts.

FUNDING

Reimbursement for costs of managing forest resources for timber is authorized by 10 USC 2665, and is administered in accordance with DOD 7000.14-R, Volume 11A, Chapter16, August 2002.

Funds which finance Department of Defense forestry programs originate from the sale of timber and other forest products on military lands. Funds will be programmed through USMC HQ and the STEP computer system. Management expenses shall be directly related to production of timber products. Expenditures shall be accounted for in accordance with reporting requirements contained in NAVCOMPT Manual, Volume II, Chapter 4, and Volume III, Chapter 5.

TECHNICAL ASSISTANCE

Successful implementation of this plan will require cooperation between the Installation, other Navy and Marine Corps personnel, contractors, cooperating federal and state agencies, and NAVFAC SE natural resources personnel.

Professional assistance will be provided by a NAVFAC SE staff forester. This assistance includes, but is not limited to, site examination in advance of planned work, preparation of plans and specifications, and yearly planning. In addition, the NAVFAC SE forester will prepare contract specifications as needed for timber sales.

The Natural Resources Conservation Service can provide technical assistance in areas relating to soil erosion, drainage structures, and woodland suitability.

The U. S. Forest Service can provide technical assistance for control and prevention of insect and disease outbreaks.

The South Carolina Division of Forestry can provide technical assistance with aerial detection of insect infestations. They are also available for wildfire suppression assistance upon request.

The U. S. Fish and Wildlife Service provides technical assistance related to threatened, endangered, and protected species, and their effect on forest management.

FORESTRY CONTRACTS

Forestry contracts are of two general types: forest product sales and maintenance/services. The sales contracts involve the sale of forest products such as timber and firewood. The maintenance/ services contracts involve such activities as site preparation, reforestation, prescribed burning, and other forestry operations where there are limitations for doing the work with federal employees.

2. FOREST DESCRIPTION

HISTORY

The Marine Corps began its formal forestry program at MCAS Beaufort in the early 1960s and has pursued it since that time. Beginning in the early 1970s, many open areas (previously maintained by mowing) have been planted to slash and loblolly pine trees. This accounts for a large portion of the forested acreage in younger age classes. Considerable amounts of maintenance funds have been saved over the years because of these planted trees.

FOREST COMPOSITION

The predominant forest cover on the Installation is pine trees. Loblolly, slash and longleaf are the major species present. Figures D-1 and D-2 and Table D-1show the managed forest of the installation with the stand number, forest type and age class for each stand. The stand type is based on the dominant commercial species in each stand. Dominant hardwoods include sweetgum, water oak, laurel oak, and live oak.

The stands have been grouped into compartments based on location. There are nine compartments on the Main Station and Laurel Bay comprises the tenth compartment (Figure D-3). Compartments on the Main Station range in size from 119 to 242 acres of forested land. Laurel Bay forest management lands include 271 acres, but harvest on many of these acres is constrained by cultural resources sites and ecological considerations.

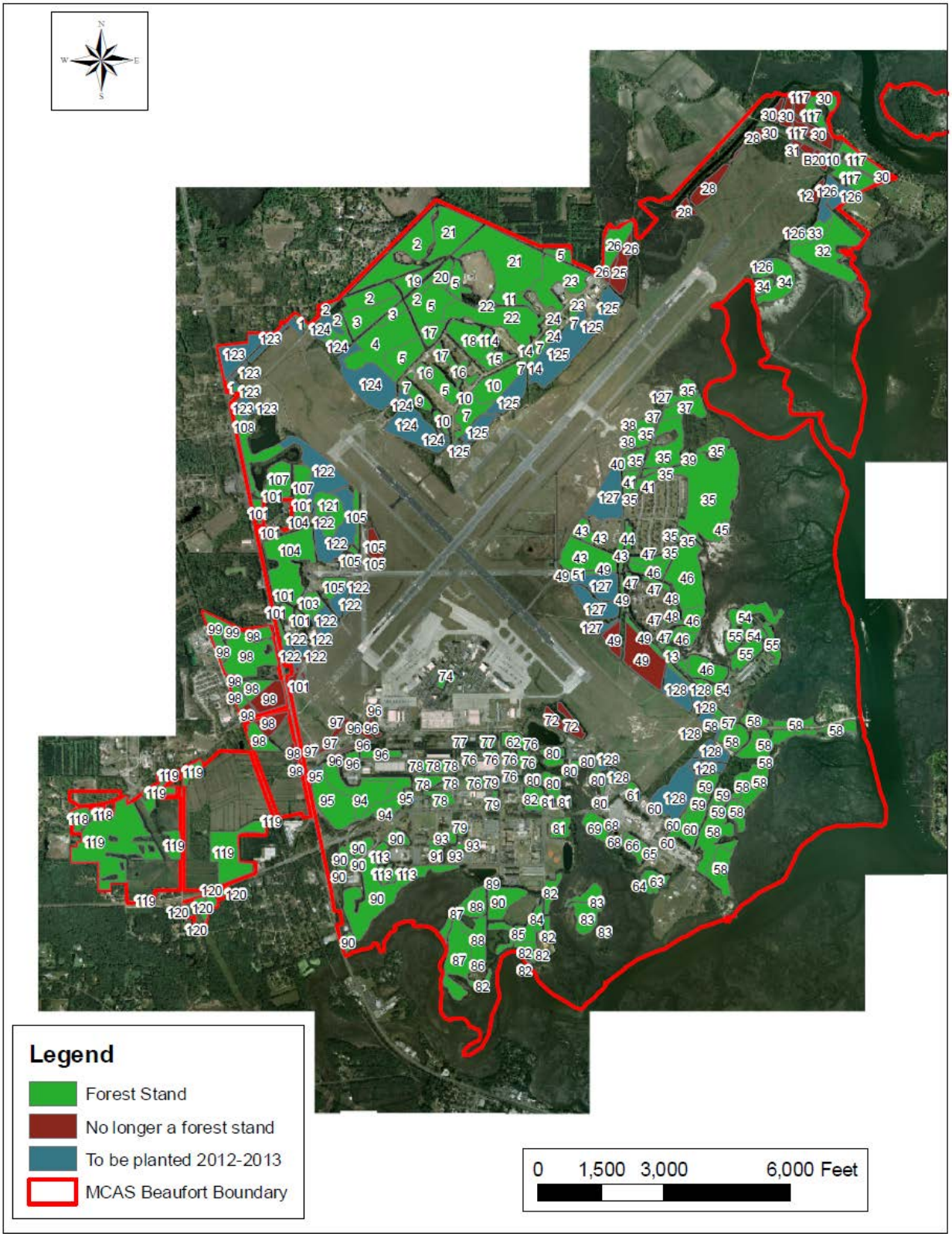

Figure D-1. Main Station Forest Stands.

Figure D-2. Laurel Bay Forest Stands

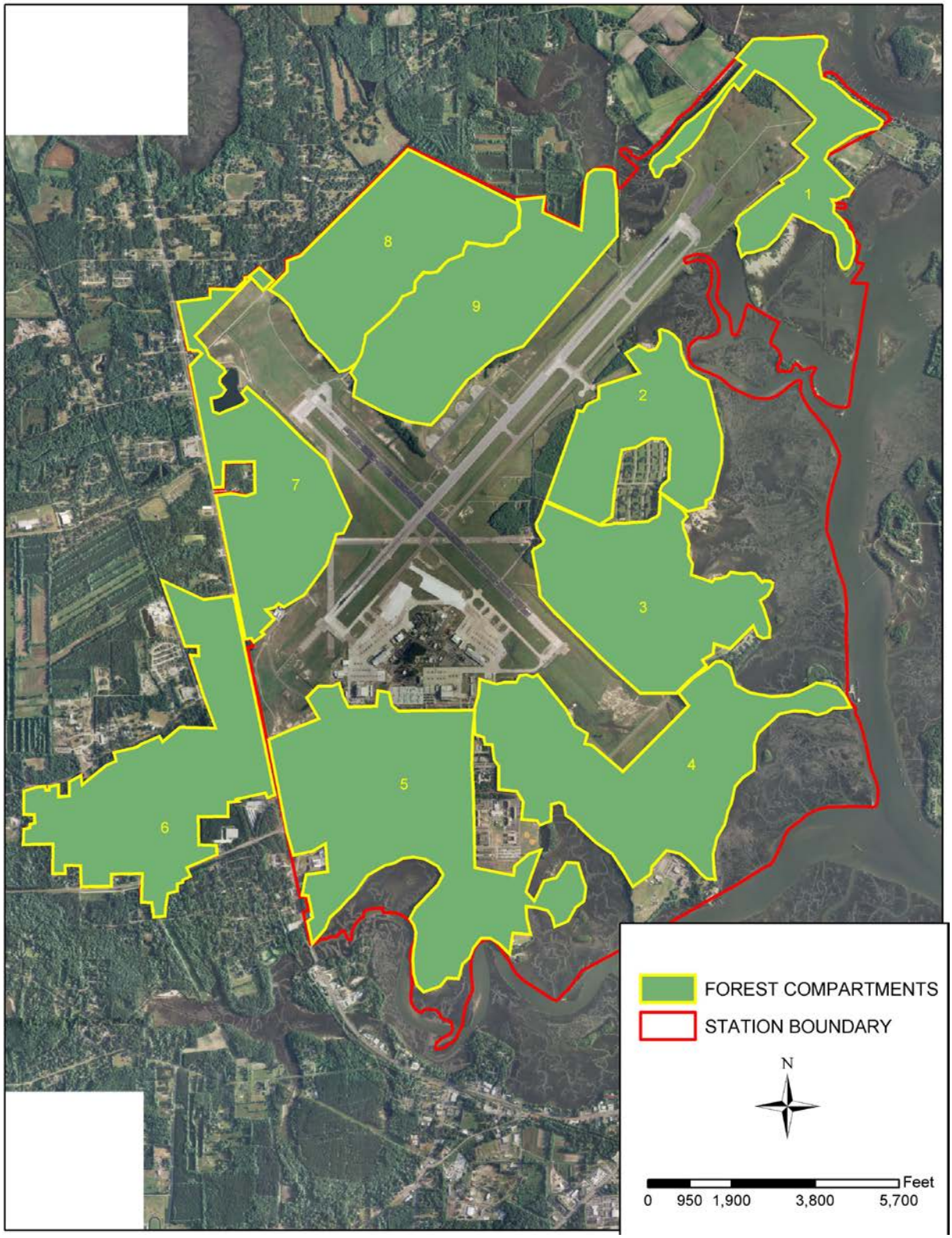

Figure D-3. Forest Compartments at the Main Station.

Table D-1. Stand Information for MCAS Beaufort, South Carolina.

STAND #	FOREST TYPE	SIZE_CLASS	YEAR OF ORIGIN	ACREAGE
MAIN STATION				
1	HARDWOODS	POLETIMBER	1967	1.4
2	LOBLOLLY PINE	POLETIMBER	1976	44.0
3	SLASH PINE	POLETIMBER	1968	15.1
4	LOBLOLLY PINE	POLETIMBER	1972	28.2
5	HARDWOODS	OPEN	1960	40.9
7	HARDWOODS	SAWTIMBER	1949	12.7
9	LOBLOLLY PINE	SAWTIMBER	1944	3.2
10	SLASH PINE/HARDWOOD	SAWTIMBER	1966	16.1
11	SLASH PINE	POLETIMBER	1960	5.7
13	HARDWOODS	NONSTOCKED	1947	2.7
14	LOBLOLLY PINE/HARDWOOD	SAWTIMBER	1959	1.4
15	LOBLOLLY PINE	SAWTIMBER	1964	4.6
16	SLASH PINE	SAWTIMBER	1967	6.4
17	LOBLOLLY PINE	SAWTIMBER	1965	7.1
18	SLASH PINE	SAWTIMBER	1967	12.0
19	LOBLOLLY PINE/HARDWOOD	POLETIMBER	1967	6.0
20	SLASH PINE	POLETIMBER	1979	4.7
21	LOBLOLLY PINE/HARDWOOD	SAWTIMBER	1961	58.8
22	LOBLOLLY PINE	SAWTIMBER	1964	27.0
23	SLASH PINE	POLETIMBER	1974	21.7
24	LOBLOLLY PINE	SAWTIMBER	1960	1.8
26	LOBLOLLY PINE/HARDWOOD	POLETIMBER	1967	8.7
30	LOBLOLLY PINE	SAWTIMBER	1937	4.1
32	LOBLOLLY PINE/HARDWOOD	SAWTIMBER	1948	26.6
33	LOBLOLLY PINE	POLETIMBER	1975	6.1
34	NONSTOCKED/BRUSH	OPEN	1960	15.0
35	SLASH PINE	POLETIMBER	1973	92.4
37	SLASH PINE	SAWTIMBER	1966	8.0
38	SLASH PINE	POLETIMBER	1980	1.4
39	SLASH PINE	SAWTIMBER	1963	1.0
40	SLASH PINE	POLETIMBER	1980	1.0
41	LOBLOLLY PINE	POLETIMBER	1974	4.2
43	HARDWOODS	NONSTOCKED	1960	22.7
44	SLASH PINE	POLETIMBER	1978	1.6
45	LOBLOLLY PINE	SAWTIMBER	1926	1.5
46	LOBLOLLY PINE	SAWTIMBER	1963	32.6
47	LOBLOLLY PINE	POLETIMBER	1973	7.1

STAND #	FOREST TYPE	SIZE_CLASS	YEAR OF ORIGIN	ACREAGE
48	SLASH PINE	SEEDLING/SAPLING	1998	1.5
49	HARDWOODS	POLETIMBER	1948	3.7
54	SLASH PINE	POLETIMBER	1973	3.1
55	SLASH PINE/HARDWOOD	SAWTIMBER	1966	23.0
57	LOBLOLLY PINE	POLETIMBER	1971	2.8
58	LOBLOLLY PINE	SAWTIMBER	1964	32.8
59	LOBLOLLY PINE	POLETIMBER	1978	3.8
60	SLASH PINE	POLETIMBER	1973	2.6
62	LOBLOLLY PINE/HARDWOOD	SAWTIMBER	1925	4.3
63	LOBLOLLY PINE/HARDWOOD	SAWTIMBER	1964	4.2
64	NONSTOCKED/BRUSH	OPEN	1960	1.4
65	SLASH PINE	POLETIMBER	1971	1.6
66	LOBLOLLY PINE	SAWTIMBER	1959	3.4
67	LOBLOLLY PINE	POLETIMBER	1975	0.8
68	LOBLOLLY PINE	SAWTIMBER	1967	1.8
69	SLASH PINE	POLETIMBER	1966	5.2
70	LOBLOLLY PINE	POLETIMBER	1983	0.2
74	LOBLOLLY PINE	POLETIMBER	1983	2.3
76	SLASH PINE	POLETIMBER	1975	6.6
77	LOBLOLLY PINE	SAWTIMBER	1919	2.7
78	SLASH PINE	SAWTIMBER	1969	14.6
79	LOBLOLLY PINE	SAWTIMBER	1942	3.6
80	HARDWOODS	POLETIMBER	1946	9.7
81	LOBLOLLY PINE	POLETIMBER	1974	7.2
82	LOBLOLLY PINE/HARDWOOD	SAWTIMBER	1938	16.2
83	LOBLOLLY PINE	SAWTIMBER	1963	13.6
84	LOBLOLLY PINE	POLETIMBER	1977	2.6
85	LOBLOLLY PINE	POLETIMBER	1972	6.7
86	LOBLOLLY PINE	POLETIMBER	1983	1.0
87	LOBLOLLY PINE	SAWTIMBER	1956	23.0
88	SLASH PINE	SAWTIMBER	1968	14.2
89	LOBLOLLY PINE	POLETIMBER	1975	1.3
90	LOBLOLLY PINE/HARDWOOD	SAWTIMBER	1916	58.4
91	LOBLOLLY PINE	POLETIMBER	1971	2.0
93	LOBLOLLY PINE	SAWTIMBER	1965	4.7
94	LOBLOLLY PINE	POLETIMBER	1976	20.3
95	LOBLOLLY PINE/HARDWOOD	SAWTIMBER	1946	30.0
96	LOBLOLLY PINE/HARDWOOD	SAWTIMBER	1965	4.5
97	LOBLOLLY PINE	POLETIMBER	1986	4.2
98	LOBLOLLY PINE	POLETIMBER	1986	47.6

STAND #	FOREST TYPE	SIZE_CLASS	YEAR OF ORIGIN	ACREAGE
99	LONGLEAF PINE	SAWTIMBER	1949	5.4
100	SLASH PINE	SAWTIMBER	1962	1.5
101	LOBLOLLY PINE/HARDWOOD	POLETIMBER	1967	27.1
102	LOBLOLLY PINE	POLETIMBER	1983	1.7
103	LOBLOLLY PINE	POLETIMBER	1974	3.2
104	LOBLOLLY PINE	POLETIMBER	1976	42.4
105	LOBLOLLY PINE	POLETIMBER	1985	4.7
107	LOBLOLLY PINE	POLETIMBER	1976	12.6
108	LOBLOLLY PINE/HARDWOOD	SAWTIMBER	1920	1.6
109	SLASH PINE	POLETIMBER	1970	0.5
111	LOBLOLLY PINE	POLETIMBER	1983	0.1
112	SLASH PINE/HARDWOOD	POLETIMBER	1973	1.0
113	LOBLOLLY PINE	POLETIMBER	1978	4.3
114	LOBLOLLY PINE	POLETIMBER	1980	3.0
117	LOBLOLLY PINE	POLETIMBER	1993	19.0
118	LOBLOLLY PINE	POLETIMBER	1998	4.4
119	HARDWOODS	POLETIMBER	1998	80.6
120	LOBLOLLY PINE	SAWTIMBER	1998	5.0
121	LOBLOLLY PINE	SEEDLING/SAPLING	2012	10.7
122	LOBLOLLY PINE	SEEDLING/SAPLING	2012	60.4
123	LOBLOLLY PINE	SEEDLING/SAPLING	2012	18.6
124	LOBLOLLY PINE	SEEDLING/SAPLING	2012	51.7
125	LOBLOLLY PINE	SEEDLING/SAPLING	2012	51.5
126	LOBLOLLY PINE	SEEDLING/SAPLING	2012	12.3
127	LOBLOLLY PINE	SEEDLING/SAPLING	2012	38.9
128	LOBLOLLY PINE	SEEDLING/SAPLING	2012	45.5
LAUREL BAY				
1	LOBLOLLY PINE/HARDWOOD	SAWTIMBER	1930	88.1
2	LOBLOLLY PINE	SAWTIMBER	1925	2.3
3	LOBLOLLY PINE	POLETIMBER	1998	3.6
4	LOBLOLLY PINE	POLETIMBER	1978	12.4
5	LOBLOLLY PINE	POLETIMBER	1980	2.6
6	LOBLOLLY PINE	POLETIMBER	1969	2.5
8	LOBLOLLY PINE/HARDWOOD	SAWTIMBER	1927	16.4
10	LOBLOLLY PINE/HARDWOOD	SAWTIMBER	1919	14.9
12	HARDWOODS	SAWTIMBER	1925	4.3
13	LONGLEAF PINE	SAWTIMBER	1930	63.9
14	HARDWOODS	SAWTIMBER	1954	3.5
15	LOBLOLLY PINE	POLETIMBER	1968	4.2
18	LOBLOLLY PINE	SAWTIMBER	1959	9.1
19	LOBLOLLY PINE	SAWTIMBER	1956	5.8

STAND #	FOREST TYPE	SIZE_CLASS	YEAR OF ORIGIN	ACREAGE
			TOTAL ACREAGE	1727.6
			LAUREL BAY ACREAGE	271.2
			MAIN STATION ACREAGE	1456.4
			# STANDS LONGLEAF	2
			ACREAGE LONGLEAF	69.3
			# STANDS LOBLOLLY	62
			ACREAGE LOBLOLLY	792.4
			# STANDS SLASH	22
			ACREAGE SLASH	222.4
			# STANDS PINE/HARDWOOD	19
			ACREAGE PINE/HARDWOOD	444.9
			# STANDS VARIOUS HARDWOODS	10
			ACREAGE VARIOUS HARDWOODS	182.2
			ACREAGE NONSTOCKED/BRUSH	16.4

3. MANAGEMENT BACKGROUND

Forest management will be sustained yield and ecosystem based in support of the military mission and the local environment and economy.

OBJECTIVES

Appendix B provides objectives for the entire INRMP. Within the constraints of these objectives and the general concepts of ecosystem management, forest management objectives will include:

- Practice the "sustained-yield" management concept. Sustained yield is management of forest property for continuous production, with the aim of achieving an approximate balance between net growth and harvest. This is accomplished by annual or periodic cutting.
- Grow native tree species that are appropriate for the site planted; convert areas with inappropriate species to appropriate species as opportunities arise.
- Reforest open land to obtain high production of forest products.
- Thin forested areas where required and harvest mature stands having diminished growing potential. Thinning decreases competition among trees and permits leave trees to grow faster. Harvesting mature stands will provide a crop of timber for sale and conversion into forest products (building lumber, paper, etc.) while providing a place for regenerating new stands. Thinnings also provide more forage and cover for various wildlife species. Young stands provide habitat for early successional (scrub-shrub) species, many of which are in decline nationwide.
- When clearing construction sites, as many trees as practical should be left on site to beautify the facility, clean the air, reduce dust and noise, and provide a "natural" setting. Merchantable trees not left to enhance the site will be salvaged and sold.
- Protect forested areas from possible wildfires by periodic prescribe burnings of pine stands and by maintaining firebreaks.
- Reduce grounds maintenance costs, erosion, and runoff, provide sound and dust barriers, and beautify the Installation by planting trees where feasible on currently mowed or maintained areas.

FOREST MANAGEMENT SYSTEM

Stands will mostly be managed using an even-aged management system. An even-aged stand is one in which the dominant trees originated at about the same time and develop under essentially full light conditions. Group selection or uneven-aged management may be tried on an experimental basis for small areas where the natural resources manager and cooperating agencies agree that an experimental approach to meeting INRMP objectives is the best course.

ROTATION AGES

Rotation is defined as “the period required to establish and grow timber crops to maturity and harvest”. The rotation age goals will be 80 years for pine and 100 years for hardwoods and mixed pine/hardwoods however these goals may be altered for individual stands to provide for overall health of the forest.

CUTTING CYCLE

The cutting cycle deals with the frequency of logging operations within a forest stand. An initial commercial thinning will be made when a stand reaches merchantable size. Successive thinnings will be made approximately every 7 to 10 years (the cutting cycle) based on individual stand prescriptions. As the stands become older, this cycle may be lengthened to maintain adequate stocking levels. Final harvest, at the approximate rotation age, will terminate the cutting cycle and the stand will be regenerated.

FOREST POTENTIAL

“Forest potential” is the maximum productive capacity of the forested land. This calculation is based on site index (relative site quality) and the potential volume that the site will produce under fully stocked conditions. The forested areas on the Installation are producing at just over 50% of their forest potential. Given that the INRMP under which the forest is managed has a variety of goals that conflict with maximizing timber production, the current production is acceptable.

4. SILVICULTURE

CONCEPTS

Most of the soils, topography, and climate of the Installation favor the production of pine timber on most sites. Loblolly, slash, and longleaf pine are the favored species, and will be perpetuated on suitable sites.

Hardwoods are limited in total area, but they contribute much to the food and habitat for wildlife. Hardwood species include hickory, yellow poplar, oak, dogwood, sweetgum, holly, maple, and blackgum. These species are preferred on select sites across the Installation however sweetgum can dominate many

upland sites and must sometimes be controlled to provide growing space for other trees, shrubs, and herbaceous species.

Mast, den, and cavity tress will be left when feasible for wildlife feeding, nesting, and denning purposes. Areas with rare plants and plant communities will also be protected.

HARVESTING METHODS

The installation will utilize a variety of intermediate harvesting methods required to achieve the goals and objectives of the INRMP. Types utilized may include:

Intermediate Cuttings

Cuttings designed to improve existing stands are knows as intermediate cuttings and include many types, three of which are discussed below:

Thinning

A thinning is a cutting performed in a dense immature stand to increase the rate of growth, improve stand composition, promote sanitation, and aid in decomposition of litter. Thinnings can begin when the trees in the stand reach minimum merchantability limits and continue periodically until final harvest at rotation age.

Improvement Cutting

Improvement cuttings are made in stands older than sapling stage, usually to improve the composition of a stand. This type of cut is most often applied to wild stands being placed under management and involves removal of undesirable trees which are of sufficient size to provide merchantable products. Types of trees removed in addition to the undesirable species include diseased, injured, unthrifty (likely to die before the next cut), insect infested, and poorly formed (forked or crooked). Improvement cuttings and thinnings in a stand are usually concurrent operations.

Salvage Cutting

Salvage cuttings are made to remove dead, injured, or deteriorating trees in order to utilize them before they become worthless. Trees should be salvaged promptly following tornado or other blowdowns, severe fires, or attacks of insects or diseases. If extensive areas are damaged, those deemed most likely to live may be kept as seed trees. It is often difficult to judge whether or not fire damaged treees will die. However, the decision should be made soon after the fire to ensure that adequate time is available to harvest the trees before they become unmerchantable. Salvage cuts are also required for land clearing in advance of construction.

REGENERATION CUTTINGS

The removal of mature and overmature trees in a stand to facilitate regeneration of the desired species is called a regeneration cut. There are three primary types of even-aged management regeneration cuts which may be used on the Installation:

Clear Cutting

Stands may be clear cut where trees are overmature, diseased, or dying, or when a valid reason exist for changing the species composition of the forest. Clear cuts are also made to establish or rearrange stand age classes within the total forest. (New construction may require clear cutting, but this is not a silvicultural practice.) Clear cut areas can be reforested by natural seeding from adjacent uncut trees, planting, artificial seeding, stump sprouts, or existing seeds. Extensive clear cut areas are usually reforested artificially. Clear cuts will not be used as a silvicultural tool to regenerate stands on MCAS Beaufort if other types of regeneration cuttings can be employed successfully.

Seed Tree Cut

This type of regeneration cut results in the removal of all trees except a small number of seed bearers. Seed trees may be left standing singly, or in groups of 6 to 8 trees if windthrow may be a problem.

Shelterwood Cut

Basically, a shelterwood cut is a modification of the seed tree cut, where larger numbers of seed trees are left. Shelterwood cutting is one of the most complex methods of regenerating trees, being best applied to even-aged stands comprised of heavy seeded species such as longleaf pine.

REGENERATION METHODS

Natural Seeding

Natural seeding is the most economical method of reproducing trees if seed of the desired species is, or will be, abundant within a year or two of the time scheduled for regeneration. Seed trees left on or adjacent to the site supply the seed source for the new crop of trees.

Planting

It is not always possible, nor desirable, to regenerate an existing stand of trees naturally. Artificial regeneration methods must be used when sufficient seed bearing trees of the desired species and form are not present, or the species presently occupying the site are no longer desired. Planting nursery grown seedlings is one method of artificial regeneration. Previously prepared sites can be machine or had planted at prescribed spacing with desired species.

Direct Seeding

Direct seeding is an artificial regeneration method accomplished by spreading seed over a previously prepared site at a prescribed rate per acre. The seed can be applied air, land vehicle, or hand.

TIMBER STAND IMPROVEMENT

This is, broadly, the release of trees of a desirable species from the competition of herbs, brush, or other trees. It differs from other described types of silvicultural treatments in that the trees removed are unmerchantable, or marginally merchantable.

This predominant timber stand improvement practiced on the Installation will be prescribed burning:

- Prescribed burning in pine stands is a good method for controlling understory vegetation which competes with the desirable overstory for water and nutrients.
- Prescribed burning is the best way to recycle nutrients and produce new forage and seeds for a variety of wildlife.
- Prescribed burning maintains conditions suitable for a variety of plants and animals not found in unburned stands and for increasing the vigor and populations of plants that only occur sporadically in unburned stands. This increases biodiversity on the Installation as a whole.
- Prescribed burning forest lands on the Installation must and will be coordinated in advance with the South Carolina Forestry Commission.
- Burning will be planned and supervised by experienced personnel, in close coordination with the South Carolina Forestry Commission to ensure that all necessary safety precautions are taken. Coordination with the Installation Fire Department and Air Operations Officer is also required prior to burning.
- Prescribed burning will be conducted in accordance with the prescribe fire SOP (Appendix H).

5. FOREST PROTECTION

Protection of the installation forest use areas not only involves all physical hazards to individual tress such as wildfire, insects, and disease, but considers all other environmental and aesthetic constraints as well.

WILDFIRE

Firebreaks, properly located, are mandatory. Permanent breaks are those maintained each year to protect against wildfire, and are generally wider (8 to 10 feet) and provide more protection than temporary breaks that are placed in new locations each year to perform prescribed burns. Permanent roads, trails, streams, etc. serve as excellent firebreaks and do not require annual maintenance.

By prescribed burning the pine woodland areas, fuel for wildfire (either natural or caused by man) will be greatly reduced, and the safety of such areas increase. Prescribed burning is a good way to reduce hazardous forest fuels in or near ordnance storage areas or any other area of high damage risk on the base.

DISEASES

Fusiform Rust (*Cronartium fusiforme*) is a disease affecting various pine species on the Installation. Galls are the first signs of this disease. Galls grow on branches and trunks of trees, eventually encircling the tree or branch and killing it. Thinnings will emphasize salvage and removal of diseased trees. Some highly infected plantations may have to be cleared and replanted.

INSECTS

Southern Pine, Ips, and Black Turpentine beetles attack and kill susceptible pine trees. The attack intensity depends on field conditions, tree vigor, and weather. Needles on trees will turn brown within several days after a fatal attack. Occasional dead trees need not be of concern, but if groups of a half-dozen or more are noted, a forester will investigate quickly and provide recommendations. Initial control includes cutting and removing infested trees and a buffer of uninfested trees.

Insect or disease outbreaks of other causes will be dealt with as discovered. The installation will utilize the best available science in dealing with such outbreaks.

SCENIC VALUES

Protection of the forest environment includes protecting scenic values during routine management work. Scenic values will be protected when trees are to be cut from area of high visibility. Applicable practices may include the following

Limited Removal of Trees

Tree removal can be limited along roads or whenever required, which will limit the resulting logging debris. Hardwoods in particular should be left along roads because they act as a visual shield.

Leaving Picturesque Trees

Large, unusual, or otherwise graphically interesting trees will be left within view of roads and other areas.

Lopping Tops to Ground Level

Top lopping provides for rapid disintegration of debris and eliminates the eyesore created by debris along roadways. It is a labor intensive operation, but may be required within the first 50 feet of woods along some stand boundaries.

Loading Logs

Log loading will be restricted to areas approved by the Natural Resources Manager.

Felling Trees

Felling trees in a direction away from roads and specialty areas will be enforced. This directional felling will keep the resulting debris inside the existing tree line.

Logging Debris

Standard clauses in all timber harvesting contracts will provide for protection of facilities and cleanup of logging debris from mowed areas and access roads.

OTHER ENVIRONMENTAL

Control of non-point sources of water pollution, wetlands protection, and floodplain management will be considered in all aspects of forest management.

Pesticides

Any required pesticide treatment will be done under the direct supervision of a DOD certified Pest Control operator with strict adherence to label instructions and in accordance with EPA regulations.

Erosion & Sedimentation

Forestry funds may be provided to correct erosion problems in forested areas. Firebreaks and logging access roads will be designed to minimize erosion and subsequent sedimentation of water courses. All harvesting contracts will include specific clauses for soil and water protection.

Wetlands Protection

Executive Order 11990, "Protection of Wetlands", Sections 404 and 501 of the Clean Water Act, and Sections 9 and 10 of the Rivers and Harbours Act require Federal agencies to take action to minimize destruction, loss, degradation of wetlands. These requirements will be met.

Flood Plain Management

Executive Order 11988, "Flood Plain Management", requires Federal agencies to evaluate effects of actions they take on flood plains. These requirements will be met.

Best Management Practices

Contractors will adhere to "South Carolina's Best Management Practices for Forestry" during all timber harvesting and planting operations.

6. PLANNED MANAGMENT

Few regeneration cuts are planned over the next 10 years. Those should occur in stands listed as non-stocked/brush in Table D-1 and those areas which have to be harvested to allow unobstructed communications between aircraft and the tower or aviation equipment (Figure D-4). These areas will be managed as either short rotation pulpwood stands or be thinned to approximately 25 trees per acre. Other cuttings will be thinnings and salvage operations.

Several areas near the runways are scheduled to be planted to pine early in this planning cycle. Attempts will be made to keep any site preparation soil disturbance to a minimum or to plant seedlings "in the rough" and release them later. Some additional planting may occur if current use of unforested lands, such as the agricultural outlease or operational areas, ceases. The few stands listed as non-stocked/brush in Table D-1 may also be site prepared and replanted to appropriate pine species, especially if these stands contain invasive exotic plants.

In order to reduce the potential for deer/aircraft strikes and further institute ecosystem management, thinnings will be conducted throughout the Installation over the planning period. Thinnings will generally be arranged by compartment (Figure D-3) with one compartment targeted each year. Some areas of other compartments may also be cut to achieve specific management objectives such as attracting deer away from runways, removing exotic species, or targeting an especially overstocked stand. Almost all thinnings will be in pine stands where basal areas will be thinned back to 70 square feet per acre or less following the cut. Combined with prescribed burning, this should increase the forage available for deer and help to reduce deer / aircraft collisions.

Figure D-4. Timber Areas Managed for Clear Zone Compliance and More Effective Aircraft-to-Ground Communications.

Table D-2. Stand Data from 2012 Inventory.

RU	BA PPW	BA PST	BA Hwd PW	BA Hwd ST	**BA Total**	Vol Pine PW (cd.)	Vol Pine ST (BFS)	Vol Hw PW (cd.)	Vol Hw ST (BFD)	Tons Pine PW / ac	Tons Pine ST / ac	Tons Hwd PW / ac	Tons Hwd ST / ac	**Acres**
Main Station														
M16901 0001	8.1	30.0	39.4	3.1	**80.6**	4.0	2906.0	8.4	116.0	10.6	21.8	24.5	1.0	**1.4**
M16901 0002	31.5	32.4	13.9	0.0	**77.8**	5.1	2622.0	2.8	0.0	13.5	19.7	8.2	0.0	**44.0**
M16901 0003	23.3	40.0	6.7		**70.0**	10.9	3376.0	1.7		29.1	25.3	4.9	0.0	**15.1**
M16901 0004	4.0	49.7	26.0	4.0	**83.7**	2.0	5031.0	5.8	168.0	5.2	37.7	16.7	1.5	**28.2**
M16901 0005	8.1	30.0	39.4	3.1	**80.6**	4.0	2906.0	8.4	116.0	10.6	21.8	24.5	1.0	**40.9**
M16901 0007	40.0	80.0	10.0		**130.0**	20.5	7560.0	3.2		54.7	56.7	9.3	0.0	**12.7**
M16901 0009	20.4	66.7	22.8	2.9	**112.1**	9.7	6754.5	3.9	245.0	26.0	50.7	11.3	1.1	**3.2**
M16901 0010	4.3	44.3	34.3	10.0	**92.9**	2.1	4737.0	8.4	600.0	5.8	35.5	24.4	5.3	**16.1**
M16901 0011	4.3	84.3	14.3		**102.9**	2.3	9024.0	108. 0	0.0	6.2	67.7	8.5	0.0	**5.7**
M16901 0013	0.0	10.0	60.0	0.0	**70.0**	0.0	1206.0	14.1	0.0		9.0	40.9	0.0	**2.7**
M16901 0014	19.3	21.9	48.5	2.6	**92.3**	9.9	2255.0	8.2	96.0	26.5	16.9	23.8	0.8	**1.4**
M16901 0015	10.0	15.0	35.0	0.0	**60.0**	5.0	2100.0	7.4	0.0	13.5	15.8	21.3	0.0	**4.6**
M16901 0016	10.8	53.1	23.1	0.0	**87.0**	4.0	5621.0	4.6	0.0	10.6	42.2	13.3	0.0	**6.4**
M16901 0017	17.5	47.5	15.0	0.0	**80.0**	8.6	5139.0	4.0	0.0	23.0	38.5	11.6	0.0	**7.1**
M16901 0018	10.8	53.1	23.1	0.0	**87.0**	4.0	5621.0	4.6	0.0	10.6	42.2	13.3	0.0	**12.0**
M16901 0019	21.4	14.3	34.3	0.0	**70.0**	9.0	1095.0	5.2		24.0	8.2	15.1	0.0	**6.0**
M16901 0020	37.5	42.5	27.5	0.0	**107.5**	17.7	3569.0	5.3	0.0	47.3	26.8	15.3	0.0	**4.7**
M16901 0021	19.3	21.9	48.5	2.6	**92.3**	9.9	2255.0	8.2	96.0	26.5	16.9	23.8	0.8	**58.8**
M16901 0022	4.0	73.0	13.0	2.0	**92.0**	2.0	8200.0	3.3	73.0	5.4	61.5	9.7	0.6	**27.0**
M16901 0023	4.0	56.0	4.0	0.0	**64.0**	1.9	6039.0	1.0	0.0	4.9	45.3	3.0	0.0	**21.7**
M16901 0024	10.0	70.0	25.0	0.0	**105.0**	5.5	7087.0	5.8		14.8	53.2	16.7	0.0	**1.8**
M16901 0026	21.4	14.3	34.3	0.0	**70.0**	9.0	1095.0	5.2		24.0	8.2	15.1	0.0	**8.7**
M16901 0030	20.0	46.7	30.0	6.7	**103.4**	8.9	4839.0	3.3	431.0	23.7	36.3	9.6	3.8	**4.1**
M16901 0032	11.7	56.7	43.3	2.5	**114.2**	5.6	5656.0	9.4	134.0	14.9	42.4	27.1	1.2	**26.6**
M16901 0033	56.7	66.7	6.7		**130.1**	27.6	6304.0	1.6		73.7	47.3	4.6	0.0	**6.1**
M16901 0034	10.0	80.0			**90.0**	6.4	7367.0			17.1	55.3		0.0	**15.0**
M16901 0035	13.1	46.3	11.3	0.9	**71.5**	6.8	4768.0	2.7	23.0	18.2	35.8	7.7	0.2	**92.4**

RU	BA PPW	BA PST	BA Hwd PW	BA Hwd ST	**BA Total**	Vol Pine PW (cd.)	Vol Pine ST (BFS)	Vol Hw PW (cd.)	Vol Hw ST (BFD)	Tons Pine PW / ac	Tons Pine ST / ac	Tons Hwd PW / ac	Tons Hwd ST / ac	**Acres**
M16901 0037	10.8	53.1	23.1	0.0	**87.0**	4.0	5621.0	4.6	0.0	10.6	42.2	13.3	0.0	**8.0**
M16901 0038	8.1	30.0	39.4	3.1	**80.6**	4.0	2906.0	8.4	116.0	10.6	21.8	24.5	1.0	**1.4**
M16901 0039		50.0			**50.0**		4995.0				37.5		0.0	**1.0**
M16901 0040	8.1	30.0	39.4	3.1	**80.6**	4.0	2906.0	8.4	116.0	10.6	21.8	24.5	1.0	**1.0**
M16901 0041	31.4	108.6	2.9	0.0	**142.9**	16.4	11464.0	0.7	0.0	43.8	86.0	2.1	0.0	**4.2**
M16901 0043	8.1	30.0	39.4	3.1	**80.6**	4.0	2906.0	8.4	116.0	10.6	21.8	24.5	1.0	**22.7**
M16901 0044	8.1	30.0	39.4	3.1	**80.6**	4.0	2906.0	8.4	116.0	10.6	21.8	24.5	1.0	**1.6**
M16901 0045	0.0	25.0	20.0	15.0	**60.0**	0.0	3618.0	5.1	874.0	0.0	27.1	14.9	7.6	**1.5**
M16901 0046	4.0	31.1	27.8	4.8	**67.7**	2.5	3413.0	6.3	217.0	6.6	25.6	18.2	1.9	**32.6**
M16901 0047	18.9	63.3	12.2	0.0	**94.4**	7.6	6520.0	2.1	0.0	20.3	48.9	6.0	0.0	**7.1**
M16901 0048	10.0	80.0			**90.0**	6.4	7367.0			17.1	55.3		0.0	**1.5**
M16901 0049	40.0	80.0	10.0		**130.0**	20.5	7560.0	3.2		54.7	56.7	9.3	0.0	**3.7**
M16901 0054	20.0	90.0			**110.0**	10.5	8812.0			28.0	66.1		0.0	**3.1**
M16901 0055	4.3	44.3	34.3	10.0	**92.9**	2.1	4737.0	8.4	600.0	5.8	35.5	24.4	5.3	**23.0**
M16901 0057	5.5	63.0	26.5	4.2	**99.2**	2.9	7376.0	5.8	223.0	7.8	55.3	16.9	2.0	**2.8**
M16901 0058	5.5	63.0	26.5	4.2	**99.2**	2.9	7376.0	5.8	223.0	7.8	55.3	16.9	2.0	**32.8**
M16901 0059	14.5	58.1	25.5	0.9	**99.0**	7.8	5727.0	6.5	41.0	20.7	43.0	18.7	0.4	**3.8**
M16901 0060	15.0	58.3	11.7		**85.0**	6.8	6708.0	3.0		18.3	50.3	8.7	0.0	**2.6**
M16901 0062	0.0	120.0	10.0	0.0	**130.0**		11468.0	1.3			86.0	3.7	0.0	**4.3**
M16901 0063	6.7	13.3	66.7	10.0	**96.7**	3.1	1213.0	14.3	568.0	8.2	9.1	41.5	5.0	**4.2**
M16901 0064	10.0	80.0			**90.0**	6.4	7367.0			17.1	55.3		0.0	**1.4**
M16901 0065		60.0			**60.0**		6063.0				45.5		0.0	**1.6**
M16901 0066	10.0	70.0	25.0	0.0	**105.0**	5.5	7087.0	5.8		14.8	53.2	16.7	0.0	**3.4**
M16901 0067	56.7	66.7	6.7		**130.1**	27.6	6304.0	1.6		73.7	47.3	4.6	0.0	**0.8**
M16901 0068	30.0	75.0	10.0		**115.0**	16.3	6949.0	1.6		43.7	52.1	4.6	0.0	**1.8**
M16901 0069	23.3	40.0	6.7		**70.0**	10.9	3376.0	1.7		29.1	25.3	4.9	0.0	**5.2**
M16901 0070	126. 0	8.0			**134.0**	58.8	621.0			157.2	4.7		0.0	**0.2**
M16901 0074	20.0	20.0	55.0	5.0	**100.0**	8.7	6930.0	9.6	258.0	23.3	52.0	27.9	2.3	**2.3**
M16901 0076	28.5	82.9			**111.4**	14.5	7331.0			38.7	55.0		0.0	**6.6**

RU	BA PPW	BA PST	BA Hwd PW	BA Hwd ST	**BA Total**	Vol Pine PW (cd.)	Vol Pine ST (BFS)	Vol Hw PW (cd.)	Vol Hw ST (BFD)	Tons Pine PW / ac	Tons Pine ST / ac	Tons Hwd PW / ac	Tons Hwd ST / ac	**Acres**
M16901 0077	36.7	93.3	16.7		**146.7**	18.7	8430.0	3.4		50.0	63.2	9.9	0.0	**2.7**
M16901 0078	13.3	38.3	16.7	1.7	**70.0**	6.3	3698.0	3.9	94.0	16.9	27.7	11.5	0.8	**14.6**
M16901 0079	20.0	46.7	30.0	6.7	**103.4**	8.9	4839.0	3.3	431.0	23.7	36.3	9.6	3.8	**3.6**
M16901 0080	17.1	25.7	38.6	8.6	**90.0**	7.6	2493.0	9.4	350.0		18.7		3.1	**9.7**
M16901 0081	31.4	108.6	2.9	0.0	**142.9**	16.4	11464.0	0.7	0.0	43.8	86.0	2.1	0.0	**7.2**
M16901 0082	20.0	28.8	33.8	15.0	**97.6**	10.2	3389.0	73.0	734.0	27.3	25.4	21.1	6.4	**16.2**
M16901 0083	4.0	31.1	27.8	4.8	**67.7**	2.5	3413.0	6.3	217.0	6.6	25.6	18.2	1.9	**13.6**
M16901 0084	40.0	90.0			**130.0**	2.7	10034.0			7.1	75.3		0.0	**2.6**
M16901 0085	13.3	71.7	3.3	1.7	**90.0**	7.3	8926.0	0.4	103.0	19.4	66.9	1.2	0.9	**6.7**
M16901 0086	20.0	20.0	55.0	5.0	**100.0**	8.7	6930.0	9.6	258.0	23.3	52.0	27.9	2.3	**1.0**
M16901 0087	15.0	56.9	19.4	1.9	**93.2**	5.8	6662.0	3.1	59.0	15.5	50.0	9.1	0.5	**23.0**
M16901 0088	9.1	90.1	14.5	0.0	**113.7**	3.1	11034.0	3.4		8.2	82.8	10.0	0.0	**14.2**
M16901 0089	56.7	66.7	6.7		**130.1**	27.6	6304.0	1.6		73.7	47.3	4.6	0.0	**1.3**
M16901 0090	13.7	52.1	39.5	8.2	**113.5**	7.4	6464.0	8.8	402.0	19.8	48.5	25.6	3.5	**58.4**
M16901 0091	40.0	60.0	30.0	0.0	**130.0**	23.2	6294.0	7.1		62.0	47.2	20.5	0.0	**2.0**
M16901 0093	30.0	75.0	10.0		**115.0**	16.3	6949.0	1.6		43.7	52.1	4.6	0.0	**4.7**
M16901 0094	56.7	66.7	6.7		**130.1**	27.6	6304.0	1.6		73.7	47.3	4.6	0.0	**20.3**
M16901 0095	11.7	56.7	43.3	2.5	**114.2**	5.6	5656.0	9.4	134.0	14.9	42.4	27.1	1.2	**30.0**
M16901 0096	6.7	13.3	66.7	10.0	**96.7**	3.1	1213.0	14.3	568.0	8.2	9.1	41.5	5.0	**4.5**
M16901 0097	70.0	5.0			**75.0**	25.7	452.0			68.7	3.4		0.0	**4.2**
M16901 0098	70.0	5.0			**75.0**	25.7	452.0			68.7	3.4		0.0	**47.6**
M16901 0099	9.2	50.8	20.4	2.3	**82.7**	4.0	5661.0	4.0	103.0	10.7	42.5	11.7	0.9	**5.4**
M16901 0100		50.0			**50.0**		4995.0				37.5		0.0	**1.5**
M16901 0101	26.0	30.0	46.0	2.0	**104.0**	12.2	2772.0	8.7	92.0	32.7	20.8	25.3	0.8	**27.1**
M16901 0102	20.0	20.0	55.0	5.0	**100.0**	8.7	6930.0	9.6	258.0	23.3	52.0	27.9	2.3	**1.7**
M16901 0103	56.7	66.7	6.7		**130.1**	27.6	6304.0	1.6		73.7	47.3	4.6	0.0	**3.2**
M16901 0104	20.0	32.1	32.9	2.1	**87.1**	9.2	3012.0	7.6	89.0	24.5	22.6	21.9	0.8	**42.4**
M16901 0105	70.0	5.0			**75.0**	25.7	452.0			68.7	3.4		0.0	**4.7**
M16901 0107	12.9	60.0	10.0		**82.9**	7.3	6734.0	2.2		19.4	50.5	6.4	0.0	**12.6**

RU	BA PPW	BA PST	BA Hwd PW	BA Hwd ST	**BA Total**	Vol Pine PW (cd.)	Vol Pine ST (BFS)	Vol Hw PW (cd.)	Vol Hw ST (BFD)	Tons Pine PW / ac	Tons Pine ST / ac	Tons Hwd PW / ac	Tons Hwd ST / ac	**Acres**
M16901 0108	13.7	52.1	39.5	8.2	**113.5**	7.4	6464.0	8.8	402.0	19.8	48.5	25.6	3.5	**1.6**
M16901 0109		60.0			**60.0**		6063.0				45.5		0.0	**0.5**
M16901 0111	20.0	20.0	55.0	5.0	**100.0**	8.7	6930.0	9.6	258.0	23.3	52.0	27.9	2.3	**0.1**
M16901 0112	4.3	44.3	34.3	10.0	**92.9**	2.1	4737.0	8.4	600.0	5.8	35.5	24.4	5.3	**1.0**
M16901 0113	50.0	80.0			**130.0**	26.0	7997.0			69.7	60.0		0.0	**4.3**
M16901 0114	20.0	20.0	55.0	5.0	**100.0**	8.7	6930.0	9.6	258.0	23.3	52.0	27.9	2.3	**3.0**
M16901 0117	70.0	5.0	10.0		**85.0**	25.7	452.0	1.6		68.7	3.4	6.4	0.0	**19.0**
M16901 0118	126. 0	8.0			**134.0**	58.8	621.0			157.2	4.7		0.0	**4.4**
M16901 0119	5.2	16.8	70.0	10.8	**102.8**	2.6	1607.0	17.4	568.0	6.8	12.1	50.5	5.0	**80.6**
M16901 0120	30.0	75.0	10.0		**115.0**	16.3	6949.0	1.6		43.7	52.1	4.6	0.0	**5.0**
M16901 0121					**0.0**						0.0		0.0	**10.7**
M16901 0122					**0.0**						0.0		0.0	**60.4**
M16901 0123					**0.0**						0.0		0.0	**18.6**
M16901 0124					**0.0**						0.0		0.0	**51.7**
M16901 0125					**0.0**						0.0		0.0	**51.5**
M16901 0126					**0.0**						0.0		0.0	**12.3**
M16901 0127					**0.0**						0.0		0.0	**38.9**
M16901 0128					**0.0**						0.0		0.0	**45.5**
Laurel Bay Housing														
M16902 0001	4.7	33.3	34.5	18.0	**90.4**	2.3	3571.0	8.9	945.0	6.2	26.8	25.7	8.3	**88.1**
M16902 0002	0.0	25.0	20.0	15.0	**60.0**	0.0	3618.0	5.1	874.0	0.0	27.1	14.9	7.6	**2.3**
M16902 0003	36.7	66.7	10.0	0.0	**113.3**	19.6	7152.0	1.5		52.3	53.6	4.3	0.0	**3.6**
M16902 0004	27.8	73.3	14.4	6.7	**122.2**	14.7	8116.0	3.5	363.0	39.2	60.9	10.1	3.2	**12.4**
M16902 0005	126. 0	8.0			**134.0**	58.8	621.0			157.2	4.7		0.0	**2.6**
M16902 0006	10.0	110.0	0.0	0.0	**120.0**	5.5	12963.0				97.2		0.0	**2.5**
M16902 0008	3.5	29.1	40.4	33.0	**106.1**	1.6	3462.0	11.5	1874. 0	4.2	26.0	33.5	16.4	**54.0**
M16902 0010	0.0	17.5	62.5	12.5	**92.5**	0.0	1884.0	16.5	520.0		14.1	47.8	4.6	**14.9**
M16902 0012	9.2	50.8	20.4	2.3	**82.7**	4.0	5661.0	4.0	103.0	10.7	42.5	11.7	0.9	**4.3**
M16902 0013	9.2	50.8	20.4	2.3	**82.7**	4.0	5661.0	4.0	103.0	10.7	42.5	11.7	0.9	**63.9**

RU	BA PPW	BA PST	BA Hwd PW	BA Hwd ST	**BA Total**	Vol Pine PW (cd.)	Vol Pine ST (BFS)	Vol Hw PW (cd.)	Vol Hw ST (BFD)	Tons Pine PW / ac	Tons Pine ST / ac	Tons Hwd PW / ac	Tons Hwd ST / ac	**Acres**
M16902 0014	5.0	0.0	65.0	40.0	**110.0**	3.1		14.4	1191. 0	8.3	0.0	41.8	10.4	**3.5**
M16902 0015	20.0	65.0	20.0	0.0	**105.0**	10.0	7101.0	4.8	0.0	26.8	53.3	13.9	0.0	**4.2**
M16902 0018	52.5	52.5	17.5	2.5	**125.0**	24.0	5285.0	2.4	92.0	54.3	39.6	6.9	0.8	**9.1**
M16902 0019	17.5	17.5	42.5	17.5	**95.0**	9.3	1907.0	10.9	691.0	25.0	14.3	31.6	6.0	**5.8**
											0.0		0.0	

APPENDIX E

BIOLOGICAL INFORMATION

PLANTS FOUND ON MCAS BEAUFORT
MAIN STATION AND AICUS ACQUISITION AREAS

Based upon a 2008 survey completed by the Citadel

Scientific Name	Common Name
Acer rubrum	Red Maple
Aesculus pavia	Red Buckeye
Agalinis fasiculata	Beach False Foxglove
Agalinis setacea	Threadleaf False Foxglove
Aletris farinosa	Colicroot
Allium bivalve	Crow Poison
Alnus serrulata	Hazel Alder
Ambrosia artemisiifolia	Annual Ragweed
Ampelopsis arborea	Peppervine
Andropogon glaucopsis	Purple Bluestem
Aralia spinosa	Devil's Walking Stick
Arisaema triphyllum	Jack-in-the-Pulpit
Aristida purpurascens	Purple Threeawn
Aristida tuburculosa	Seaside Threeawn
Arundinaria gigantia	Switch Cane
Asclepias amplexicaulis	Clasping Milkweed
Asclepias tuberosa	Butterfly Milkweed
Asplenium platyneuron	Ebony Spleenwort
Athyrium asplenioides	Southern Lady Fern
Azolla caroliniana	Carolina Mosquito Fern
Baccharis angustifolia	Saltwater False Willow
Bacopa cyclophylla	Waterhyssop
Batis maritima	Turtleweed
Berchemia scandens	Supplejack
Bignonia capreolata	Crossvine
Boehmeria cylindrical	Smallspike False Nettle
Borrichia frutescens	Bushy Seaside Tansy
Briza minor	Little Quakinggrass
Callicarpa americana	American Beautyberry
Carduus spinosissimus	Yellow Thistle
Carex glaucescens	Southern Waxy Sedge
Carex stricta	Tussock Sedge
Carphephorus odoratissimus	Vanillaleaf
Carpinus caroliniana	Ironwood
Carya glabra	Pignut Hickory
Carya illinoinensis	Pecan
Castanea pumila	Chinquapin
Ceanothus americanus	New Jersey Tea
Centella asiatica	Spadeleaf
Cephalanthus occidentalis	Buttonwood
Chasmanthium sessiliflorum var. *sessiliflorum*	Longleaf Woodoat
Chimaphila maculata	Spotted Wintergreen
Cicuta maculata	Spotted Water Hemlock

Plants found on Main Station and AICUZ, continued.

Scientific Name	Common Name
Cinnamomum camphora	Camphor Tree
Clethra alnifolia	Sweet Pepperbush
Cnidoscolus stimulosus	Finger Rot
Commelina erecta	Whitemouth Dayflower
Cornus florida	Flowering Dogwood
Crataegus flava	Yellowleaf Hawthorn
Crataegus lassa	Sandhill Hawthorne
Crotalaria angulata	Rattlebox
Crotalaria spectabilis	Showy rattlebox
Cuscuta sp.	Dodder
Cyperus albomarginatus	Flatsedge
Cyrilla racemiflora	Swamp Cyrilla
Decumaria barbara	Climbing Hydrangea
Descurainia pinnata	Western Tansymustard
Dichondra carolinensis	Carolina Ponysfoot
Diodia virginiana	Virginia Buttonweed
Diospyros virginiana	Common Persimmon
Distichlis spicata	Saltgrass
Drosera rotundifolia	Roundleaf Sundew
Dulcium arundinaceum	Sheathed Galingale
Echinochloa walteri	Coast Cockspur Grass
Elephantopus carolinianus	Carolina Elephantsfoot
Erigeron quercifolius	Oakleaf Fleabane
Eriocaulon decangulare	Pipewort
Erythrina herbacea	Coral Bean
Eupatorium capillifolium	Dog Fennel
Eupatorium mohrii	Mohr's Thoroughwort
Fimbristylis caroliniana	Carolina Fimbry
Fimbristylis castanea	Marsh Fimbry
Galactia elliottii	Elliot's Milkpea
Gaylussacia frondosa	Blue Huckleberry
Gaylussacia nana	Confederate Huckleberry
Gelsemium sempervirens	Yellow Jasmine
Geranium carolinianum	Carolina Geranium
Gordonia lasianthus	Loblolly Bay
Heterotheca graminifolia	Silverleaf Grass
Hexastylis arifolia	False Ginger
Hibiscus moscheutos	Swamp-rose Mallow
Houstonia procumbens	Roundleaf Bluet
Hydrocotyle umbellata	Manyflower Marshpennywort
Hypericum cistifolium	Roundpot St. Johnswort
Ilex glabra	Bitter Gallberry
Ilex opaca	American Holly
Ilex vomitoria	Yaupon Holly
Iris virginica	Blue Flag Iris
Itea virginica	Virginia Willow
Iva frutescens	Marsh Elder
Juncus effusus	Soft Neddlerush

Plants found on Main Station and AICUZ, continued.

Scientific Name	Common Name
Juncus roemerianus	Black Neddlerush
Juniperus silicicola	Southern Redcedar
Kregia virginica	Eastern Redcedar
Lachnanthes caroliniana	Bloodroot
Lamium amplexicaule	Henbit Deadnettle
Liatris elegans	Pinkscale Blazing Star
Ligustrum sinense	Chinese Privet
Limonium carolinianum	Sea Lavender
Lindera melissifolia	Pondberry
Liquidambar styraciflua	Sweetgum
Lireodendron tulipifera	Yellow Poplar
Litsea aestivalis	Pondspice
Lobelia cardinalis	Cardinal Flower
Lobelia glandulosa	Glade Lobelia
Lonicera japonica	Japanese Honeysuckle
Lycopodium sp.	Clubmoss
Lyonia lucida	Shining Fetterbush
Lyonia mariana	Piedmont Staggerbush
Magnolia grandiflora	Southern Magnolia
Magnolia virginiana	Sweet Bay
Medicago lupulina	Black Medick
Medicago polymorpha	Burclover
Mitchella repens	Partridge Berry
Morella cerifera	Wax Myrtle
Morus rubra	Red Mulberry
Murdannia keisak	Wartremoving Herb
Nerium oleander	Oleander
Nuttallanthus canadensis	Canada Toadflax
Nymphae odorata	American White Waterlily
Nyssa biflora	Black Tupelo
Nyssa sylvatica	Black Gum
Oenothera laciniata	Evening Primrose
Onoclea sensibilis	Sensitive Fern
Opuntia compressa	Devil's Tongue
Orchidacea sp.	Orchid
Osmunda cinnamomea	Cinnamon Fern
Osmunda regalis	Royal Fern
Oxalis stricta	Common Yellow Oxalis
Panicum hemitomon	Maidencane
Panicum lancearium	Switchgrass
Paspalum notatum	Bahia Grass
Paspalum urvillei	Vasey Grass
Persea borbonia	Red Bay
Phoradendron serotinum	Mistletoe
Photinia pyrifolia	Red Chokeberry
Phyla nodiflora	Turkey Tangle Frogfruit
Physalis viscosa ssp. *maritima*	Starhair Groundcherry

Plants found on Main Station and AICUZ, continued.

Scientific Name	Common Name
Phytolacca americana	American Pokeweed
Pinus elliottii	Slash Pine
Pinus serotina	Pond Pine
Pinus taeda	Loblolly Pine
Piptochaetium avenaceum	Blackseed Speargrass
Plantago heterophylla	Slender Plantain
Plantago sparsiflora	Pineland Plantain
Plantago virginica	Virginia Plantain
Plantanus occidentalis	Sycamore
Poa annua	Annual Bluegrass
Polygala lutea	Orange Milkwort
Polygala polygama	Racemed Milkwort
Polygonum hydropiperoides	Swamp Smartweed
Polypodium polypodioides	Resurrection Fern
Polystichum acrostichoides	Christmas Fern
Pontederia cordata	Pickerelweed
Proserpinaca pectinata	Combleaf Mermaidweed
Prunus angustifolia	Chickasaw Plum
Prunus laurifolia	Cherry Laurel
Prunus serotina	Black Cherry
Pteridium aquilinum	Bracken Fern
Pterocaulon pycnostachyum	Blackroot
Ptilimnium capillaceum	Mock Bishop's Weed
Pyrrhopappus carolinianus	Carolina Desert Chicory
Quercus falcata	Southern Red Oak
Quercus geminata	Sand Live Oak
Quercus incana	Bluejack Oak
Quercus laevis	Turkey Oak
Quercus laurifolia	Laurel Oak
Quercus margaretta	Sand Post Oak
Quercus michauxii	Swamp White Oak
Quercus nigra	Water Oak
Quercus pagoda	Cherrybark Oak
Quercus phellos	Willow Oak
Quercus pumila	Runner Oak
Quercus virginiana	Live Oak
Rhexia alifanus	Savannah Meadowbeauty
Rhexia mariana	Maryland Meadowbeauty
Rhexia nashii (Rhexia mariana var. *purpurea)*	Nash's Meadowbeauty
Rhexia virginica	Virginia Meadowbeauty
Rhus radicans	Poison Ivy
Rhynchospora caduca	Anglestem Beaksedge
Rhynchospora cyperinus	Beaksedge
Rhynchospora fascicularis ssp. *fascicularis*	Fascicled Beaksedge
Rumex hastatulus	Sourgrass
Sabal minor	Dwarf Palmetto

Plants found on Main Station and AICUZ, continued.

Scientific Name	Common Name
Sabal palmetto	Cabbage Palmetto
Sabatia stellaris	Salt Marshpink
Saccharum brevibarbe	Sortbeard Plumegrass
Saccharum giganteum	Sugarcane Plumegrass
Salicornia bigelovii	Dwarf Saltwort
Salix caroliniana	Carolina Willow
Sambucus canadensis	Elderberry
Sapium sebiferum	Chinese Tallow
Sarcocornia perennis	Chickenclaws
Sassafras albidum	Sassafras
Saururus cernuus	Lizzard's Tail
Schizachyrium scoparium var. *scoparium*	Little Bluestem
Scirpus cyperinus	Woolgrass
Scleria triglomerata	Whip Nutrush
Scutellaria integrifolia	Skullcap
Serenoa repens	Saw Palmetto
Sesbania herbacea	Bigpod Sesbania
Sesbania punicea	Rattlebox
Sesuvium maritimum	Slender Seapurslane
Sisyrinchium mucronatum	Neddletip Blue-eyed Grass
Sisyrinchium rosulatum	Annual Blue-eyed Grass
Smilax auriculata	Earleaf Greenbriar
Smilax bona-nox	Saw Greenbriar
Smilax glauca	Cat Greenbriar
Smilax laurifolia	Laurel Greenbriar
Smilax pumila	Sarsparilla Greembriar
Smilax rotundifolia	Roundleaf Greenbriar
Smilax walteri	Coral Greenbriar
Solanum carolinense	Carolina Horsenettle
Solidago sempervirens	Seaside Goldenrod
Sonchus asper	Spiny Sowthistle
Spartina alterniflora	Smooth Cordgrass
Spartina cynosuroides	Big Cordgrass
Spartina patens	Marshhay Cordgrass
Specularia perfoliata	Venus' Looking Glass
Spergula arvensis	Corn Spurry
Sphagnum sp.	Peat Moss
Sphenopholis obtusata	Prairie Wedgescale
Stachys floridana	Florida Hedgenettle
Stellaria media	Common Chickweed
Styrax grandifolia	Bigleaf Snowbell
Symphyotrichum tenuifolium	Perennial Saltmarsh Aster
Symplocos tinctoria	Horsesugar
Taxodium ascendens	Pond Cypress
Tillandsia recurvata	Small Ballmoss
Tillandsia usneoides	Spanish Moss
Tipularia discolor	Cranefly Orchid

Plants found on Main Station and AICUZ, continued.

Scientific Name	Common Name
Trichostema dichotomum	Blue Curls
Trilisa odoratissima	Deer's Tongue
Typha domingensis	Southern Cattail
Typha latifolia	Broadleaf Cattail
Uniola laxa	Sprangle Grass
Utricularia purpurea	Eastern Purple Bladderwort
Vaccinium arboreum	Farkleberry
Vaccinium stamineum	Deerberry
Vaccinium tenellum	Small Black Blueberry
Vaccinium virgatum	Smallflower Blueberry
Verbena brasiliensis	South American Vervain
Verbena carnea	Carolina False Vervain
Viburnum obovatum	Small-leaf Arrowwood
Vicia angustifolia	Garden Vetch
Vicia tetrasperma	Lentil Vetch
Viola lanceolata	Bog White Violet
Viola primulifolia	Primrose-leaf Violet
Vitis aestivalis var. *aestivalis*	Summer Grape
Vitis cinerea var floridana	Florida Grape
Vitis rotundifolia	Muscadine
Vitis vulpina	Frost Grape
Wahlenbergia marginata	Southern Rockbell
Woodwardia areolata	Netted Chainfern
Woodwardia virginica	Virginia Chainfern
Xyris sp.	Yellow-eyed Grass
Yucca filamentosa	Yucca
Zanthoxylum clava-herculis	Hercules' Club

PLANTS FOUND ON MCAS BEAUFORT
LAUREL BAY HOUSING AREA

Based upon a 2008 survey completed by the Citadel

Scientific Name	Common Name
Acer rubrum	Red Maple
Aesculus pavia	Red Buckeye
Agalinis purpurea	Purple False Foxglove
Amelanchier arborea var. *arborea*	Serviceberry
Anisostichus capreolata	Crossvine
Aralia spinosa	Devil's Walking Stick
Arisaema triphyllum	Jack-in-the-Pulpit
Aristida stricta	Pineland Threeawn
Arundinaria gigantia	Switch Cane
Asclepias humistrata	Sandhill Milkweed
Asclepias tuberosa	Butterfly Milkweed
Asplenium platyneuron	Ebony Spleenwort
Athyrium asplenioides	Southern Lady Fern
Baccharis halimifolia	Groundseltree
Berchemia scandens	Supplejack
Bidens bipinnata	Spanish Needles
Boehmeria cylindrica	Smallspike False Nettle
Bonamia patens	Bonamia
Briza minor	Little Quakinggrass
Callicarpa americana	American Beautyberry
Carex complanta	Hirsute Sedge
Carex folliculata	Northern Long Sedge
Carex howei	Prickly Bog Sedge
Carpinus caroliniana	Ironwood
Carya glabra	Pignut Hickory
Centella asiatica	Spadeleaf
Cephalanthus occidentalis	Buttonwood
Cercis canadensis	Redbud
Chimaphila maculata	Spotted Wintergreen
Clethra alnifolia	Sweet Pepperbush
Cornus florida	Flowering Dogwood
Cornus stricta	Swamp Dogwood
Decumaria barbara	Climbing Hydrangea
Dyschoriste oblogifolia	Oblongleaf Snakeherb
Elaeagnus pungens	Silverberry
Eleocharis tuberculosa	Cone-cup Spikerush
Elephantopus carolinaianus	Carolina Elephantsfoot
Elephantopus tomentosus	Devil's Grandmother
Erythrina herbacea	Coral Bean
Eupatorium capillifolium	Dogfennel
Eupatorium coelestinum	Boneset
Euonymus americanus	American Strawberry Bush
Fagus grandifolia	American Beech
Fraxinus pennsylvanica	Green Ash
Frimbristylis castanea	Marsh Fimbry

Plants found on Laurel Bay Housing, continued.

Scientific Name	Common Name
Froelichia floridana	Cottonweed
Galactia elliottii	Elliot's Milkpea
Gaylussacia frondosa	Blue Huckleberry
Gelsemium sempervirens	Yellow Jasmine
Geranium carolinianum	Carolina Geranium
Halesia sp.	Silverbell
Hamamelis virginiana	American Witchhazel
Heterotheca graminifolia	Silverleaf Grass
Hexastylis arifolia	False Ginger
Hibiscus moscheutos	Swamp-rose Mallow
Houstonia procumbens	Roundleaf Bluet
Hydrocotyle bonariensis	Largeleaf Pennywort
Hyptis alata	Bitter Mint
Ilex glabra	Bitter Gallberry
Ilex opaca	American Holly
Ilex vomitoria	Yaupon Holly
Ipomoea pandurata	Wild Sweet Potato
Iva frutescens	Marsh Elder
Juncus effusus	Soft Neddlerush
Juncus roemerianus	Black Neddlerush
Juniperus silicicola	Southern Redcedar
Lamium purpureum	Purple Deadnettle
Liatris elegans	Pinkscale Blazing Star
Liatris graminifolia	Shaggy Blazing Star
Ligustrum sinense	Chinese Privet
Limonium carolinianum	Sea Lavender
Linaria canadensis	Toadflax
Liquidambar styraciflua	Sweetgum
Lireodendron tulipifera	Yellow Poplar
Listera australis	Southern Twayblade
Lobelia elongata	Longleaf Lobelia
Lobelia spicata	Great Lobelia
Lonicera japonica	Japanese Honeysuckle
Lycopodium sp.	Clubmoss
Lyonia lucida	Shining Fetterbush
Lyonia mariana	Piedmont Staggerbush
Magnolia grandiflora	Southern Magnolia
Magnolia virginiana	Sweet Bay
Melanthera hastata	Snow Squarestem
Mikania scandens	Climbing Hempweed
Mitchella repens	Partridge Berry
Monarda punctata	Horse Mint
Monatropa uniflora	Indianpipe
Morus rubra	Red Mulberry
Murdannia keisk	Wartremoving Herb
Morella cerifera	Wax Myrtle
Nyssa sylvatica	Black Tupelo
Osmanthus americanus	American Olive

Plants found on Laurel Bay Housing, continued.

Scientific Name	Common Name
Osmunda cinnamomea	Cinnamon Fern
Ostrya virginiana	Eastern Hop Hornbeam
Oxalis rubra	Windowbox Woodsorrell
Persea borbonia	Red Bay
Phoradendron serotinum	Mistletoe
Pinus glabra	Spruce Pine
Pinus palustris	Longleaf Pine
Pinus stricta	Spruce Pine
Pinus taeda	Loblolly Pine
Poa annua	Annual Bluegrass
Polygala lutea	Orange Milkwort
Polypodium polypodioides	Resurection Fern
Prunus angustifolia	Chickasaw Plum
Prunus caroliniana	Carolina Cherry Laurel
Prunus serotina	Black Cherry
Pteridium aquilinum	Bracken Fern
Pterocaulon pycnostachyum	Blackroot
Pyrrhopappus carolinianus	Carolina Desert Chicory
Quercus laevis	Turkey Oak
Quercus laurifolia	Laurel Oak
Quercus marilandica	Blackjack Oak
Quercus michauxii	Swamp White Oak
Quercus nigra	Water Oak
Quercus virginiana	Live Oak
Rhexia alifaunus	Savannah Meadowbeauty
Rhexia mariana	Maryland Meadowbeauty
Rhus copallina	Winged Sumac
Rhus radicans	Poison Ivy
Rumex hastatulus	Sourgrass
Sabal minor	Dwarf Palmetto
Sabal palmetto	Cabbage Palmetto
Sabatia brevifolia	Shortleaf Rose Gentian
Salix caroliniana	Carolina Willow
Sambucus canadensis	Elderberry
Sapium sebiferum	Chinese Tallow
Sassafras albidum	Sassafras
Saururus cernuus	Lizzard's Tail
Scleria oligantha	Littlehead Nutrush
Scleria triglomerata	Whip Nutrush
Scutellaria integrifolia	Skullcap
Serenoa repens	Saw Palmetto
Smilax bono-nox	Saw Greenbriar
Smilax glauca	Cat Greenbriar
Smilax laurifolia	Laurel Greenbriar
Smilax walteri	Coral Greenbriar
Solanum carolinense	Carolina Horsenettle
Solidago sempervirens	Seaside Goldenrod
Stachys floridana	Florida Hedgenettle

Plants found on Laurel Bay Housing, continued.

Scientific Name	Common Name
Symplocos tinctoria	Horsesugar
Tipularia discolor	Cranefly Orchid
Tridens flavus	Purpletop Tridens
Tillandsia usneoides	Spanish Moss
Trichostema dichotomum	Blue Curls
Trilisa odoratissima	Deer's Tongue
Uniola laxa	Sprangle Grass
Uniola sessiliflora	Longleaf Woodoats
Vaccinium arboreum	Farkleberry
Vaccinium corymbosum	Highbush Blueberry
Vaccinium tenellum	Small Black Blueberry
Vernonia angustifolia	Ironweed
Viola papilionacea	Common Blue Violet
Vitus rotundifolia	Muscadine
Woodwardia areolata	Netted Chainfern
Woodwardia virginica	Virginia Chainfern
Xyris jupicai	Yellow-eyed Grass

AMPHIBIANS FOUND ON MCAS BEAUFORT

Scientific Name	Common Name
Acris gryllus	Southern Cricket Frog
Ambystoma opacum	Marbled Salamander
Ambystoma talpoideum	Mole Salamander
Bufo terrestris	Southern Toad
Eurycea quadridigitata	Dwarf Salamander
Gastrophryne carolinensis	Eastern Narrowmouth Toad
Hyla cinerea	Green Treefrog
Hyla squirella	Pine Woods Treefrog
Hyla versicolor or *Hyla chrysoscelis*	Gray Treefrog
Notophthalmus viridescens dorsalis	Eastern Newt
Plethodon variolatus	South Carolina Slimy Salamander
Pseudacris brimleyi	Brimley's Chorus Frog
Pseudacris crucifer	Spring Peeper
Pseudacris ocularis	Little Grass Frog
Pseudacris ornata	Ornate Chorus Frog
Rana catesbeiana	Bullfrog
Rana clamitans melanota	Green Frog
Rana utricularia	Southern Leopard Frog
Scaphiopus holbrookii holbrookii	Eastern Spadefoot

REPTILES FOUND ON MCAS BEAUFORT

Scientific Name	Common Name
Agkistrodon contortrix	Southern Copperhead
Anolis carolinensis	Green Anole
Cemophora coccinea copei	Northern Scarlet Snake
Coluber constrictor priapus	Southern Black Racer
Crotalus adamanteus	Eastern Diamondback Rattlesnake
Crotalus horridus	Timber Rattlesnake
Diadophis punctatus	Southern Ringneck Snake
Eumeces fasciatus	Five-lined Skink
Eumeces inexpectatus	Southeastern Five-lined Skink
Eumeces laticeps	Broadhead Skink
Kinosternon subrubrum subrubrum	Eastern Mud Turtle
Nerodia fasciata fasciata	Banded Water Snake
Ophisaurus ventralis	Eastern Glass Lizard
Scincella lateralis	Ground Skink
Tantilla coronate	Southeastern Crowned Snake
Thamnophis sirtalis	Eastern Garter Snake

MAMMALS FOUND ON MCAS BEAUFORT

Scientific Name	Common Name
Didelphis virginiana	Opossum
Lasiurus borealis	Red Bat
Lasiurus seminolus	Seminole Bat
Lynx rufus	Bobcat
Myotis austropriaparius	Southeastern Myotis
Nycticeius humeralis	Evening Bat
Odocoileus virginianus	White-tailed Deer
Procyon lotor	Raccoon
Scalopus aquaticus	Eastern Mole
Sciurus carolinensis	Gray Squirrel
Sciurus niger	Fox Squirrel
Sylvilagus floridanus	Eastern Cottontail
Sylvilagus palustris	Marsh Rabbit

BIRDS FOUND ON MCAS BEAUFORT

Scientific Name	Common Name*	Status**
Accipiter cooperii	Cooper's Hawk	U-WV
Accipiter striatus	Sharp-shinned Hawk	FC-WV
Actitis macularius	Spotted Sandpiper	FC-T, U-WV
Agelaius phoeniceus	Red-winged Blackbird	C-PR
Aimophila aestivalis	Bachman's Sparrow	U-SR
Aix sponsa	Wood Duck	C-PR
Ammodramus maritimus	Seaside Sparrow	FC-PR
Anas discors	Blue-winged Teal	C-WV
Anas fulvigula	Mottled Duck	FC-PR
Anas platyrhynchos	Mallard	CWV
Anas strepera	Gadwall	FC-WV
Anhinga anhinga	Anhinga	FC-SR, U-WV
Anthus rubescens	American Pipit	FC-WV
Archilochus colubris	Ruby-throated Hummingbird	C-SR
Ardea alba	Great Egret	C-PR
Ardea herodias	Great Blue Heron	C-PR
Arenaria interpres	Ruddy Turnstone	C-WV
Aythya affinis	Lesser Scaup	FC-WV
Aythya collaris	Ring-necked Duck	FC-WV
Baeolophus bicolor	Tufted Titmouse	C-SR
Bartramia longicauda	Upland Sandpiper	U-T
Bombycilla cedrorum	Cedar Waxwing	C-WV
Botaurus lentiginosus	American Bittern	U-WV
Branta canadensis	Canada Goose	C-WV
Bubo virginianus	Great Horned Owl	C-PR
Bubulcus ibis	Cattle Egret	C-SR, R-WV
Bucephala albeola	Bufflehead	C-WV
Buteo jamaicensis	Red-tailed Hawk	C-PR
Buteo lineatus	Red-shouldered Hawk	C-PR
Butorides virescens	Green Heron	C-SR, R-WV
Calidris alba	Sanderling	C-WV
Calidris alpina	Dunlin	C-WV
Calidris canutus	Red Knot	FC-WV
Calidris mauri	Western Sandpiper	C-WV
Calidris melanotos	Pectoral Sandpiper	FC-T
Calidris minutilla	Least Sandpiper	C-WV
Calidris pusilla	Semipalmated Sandpiper	C-T
Caprimulgus carolinensis	Chuck-will's-widow	C-SR
Cardinalis cardinalis	Northern Cardinal	C-PR
Carduelis tristis	American Goldfinch	C-WV
Carpodacus mexicanus	House Finch	FC-PR
Carpodacus purpureus	Purple Finch	R-WV
Cathartes aura	Turkey Vulture	C-PR
Catharus fuscescens	Veery	FC-T
Catharus guttatus	Hermit Thrush	FC-WV
Catharus ustulatus	Swainson's Thrush	FC-T

Birds found on MCAS Beaufort, continued.

Scientific Name	Common Name*	Status**
Chaetura pelagica	Chimney Swift	C-SR
Charadrius semipalmatus	Semipalmated Plover	C-WV
Charadrius vociferus	Killdeer	C-PR
Chen caerulescens	Snow Goose	R-WV
Chordeiles minor	Common Nighthawk	C-SR
Circus cyaneus	Northern Harrier	FC-WV
Cistothorus palustris	Marsh Wren	C-PR
Cistothorus platensis	Sedge Wren	U-WV
Coccyzus americanus	Yellow-billed Cuckoo	FC-SR
Colaptes auratus	Northern Flicker	C-PR
Colinus virginianus	Northern Bobwhite	U-PR
Columba livia	Rock Pigeon	C-PR
Contopus virens	Eastern Wood-Pewee	FC-SR
Coragyps atratus	Black Vulture	C-PR
Corvus brachyrhynchos	American Crow	C-PR
Corvus ossifragus	Fish Crow	C-PR
Cyanocitta cristata	Blue Jay	C-PR
Dendroica caerulescens	Black-throated Blue Warbler	FC-T
Dendroica coronata	Yellow-rumped Warbler	C-WV
Dendroica discolor	Prairie Warbler	FC-SR
Dendroica dominica	Yellow-throated Warbler	FC-PR
Dendroica magnolia	Magnolia Warbler	U-T
Dendroica palmarum	Palm Warbler	FC-WV
Dendroica pinus	Pine Warbler	C-PR
Dendroica virens	Black-throated Green Warbler	U-T
Dolichonyx oryzivorus	Bobolink	C-T
Dryocopus pileatus	Pileated Woodpecker	C-PR
Dumetella carolinensis	Gray Catbird	U-SR. C-WV
Egretta caerulea	Little Blue Heron	C-PR
Egretta thula	Snowy Egret	C-PR
Egretta tricolor	Tricolored Heron	C-PR
Elanoides forficatus	Swallow-tailed Kite	U-SR
Empidonax virescens	Acadian Flycatcher	FC-SR
Eudocimus albus	White Ibis	FC-PR
Euphagus carolinus	Rusty Blackbird	U-WV
Falco sparverius	American Kestrel	R-SR, FC-WV
Fulica americana	American Coot	C-WV, U-SR
Gallinago delicata	Wilson's Snipe	FC-WV
Gallinula chloropus	Common Moorhen	C-PR
Gavia immer	Common Loon	C-WV
Geothlypis trichas	Common Yellowthroat	FC-PR
Haliaeetus leucocephalus	Bald Eagle	FC-SR
Hirundo rustica	Barn Swallow	C-SR
Hydroprogne caspia	Caspian Tern	FC-PR
Hylocichla mustelina	Wood Thrush	U-SR
Icteria virens	Yellow-breasted Chat	FC-SR, R-WV
Icterus spurius	Orchard Oriole	FC-SR
Ictinia mississippiensis	Mississippi Kite	FC-SR

Birds found on MCAS Beaufort, continued.

Scientific Name	Common Name*	Status**
Junco hyemalis	Dark-eyed Junco	FC-WV
Lanius ludovicianus	Loggerhead Shrike	FC-PR
Larus argentatus	Herring Gull	FC-PR
Larus delawarensis	Ring-billed Gull	C-PR
Leucophaeus atricilla	Laughing Gull	C-PR
Limnodromus griseus	Short-billed Dowitcher	FC-WV
Lophodytes cucullatus	Hooded Merganser	C-WV
Megaceryle alcyon	Belted Kingfisher	FC-PR
Megascops asio	Eastern Screech-Owl	C-PR
Melanerpes carolinus	Red-bellied Woodpecker	C-PR
Melanerpes erythrocephalus	Red-headed Woodpecker	FC-PR
Meleagris gallopavo	Wild Turkey	FC-PR
Melospiza georgiana	Swamp Sparrow	C-WV
Melospiza melodia	Song Sparrow	C-WV
Mergus serrator	Red-breasted Merganser	C-WV
Mimus polyglottos	Northern Mockingbird	C-SR
Mniotilta varia	Black-and-white Warbler	FC-WV
Molothrus ater	Brown-headed Cowbird	C-PR
Mycteria americana	Wood Stork	FC-SR, U-WV
Myiarchus crinitus	Great Crested Flycatcher	C-SR
Numenius phaeopus	Whimbrel	C-T, U-WV
Nyctanassa violacea	Yellow-crowned Night-Heron	FC-SR, R-WV
Nycticorax nycticorax	Black-crowned Night-Heron	C-PR
Oporornis formosus	Kentucky Warbler	U-SR
Pandion haliaetus	Osprey	C-SR, U-WV
Parula americana	Northern Parula	C-SR
Passer domesticus	House Sparrow	FC-PR
Passerculus sandwichensis	Savannah Sparrow	C-WV
Passerina caerulea	Blue Grosbeak	FC-SR
Passerina ciris	Painted Bunting	FC-SR
Passerina cyanea	Indigo Bunting	C-SR
Pelecanus occidentalis	Brown Pelican	C-PR
Petrochelidon pyrrhonota	Cliff Swallow	U-T
Phalacrocorax auritus	Double-crested Cormorant	C-PR
Picoides pubescens	Downy Woodpecker	C-PR
Pipilo erythrophthalmus	Eastern Towhee	C-PR
Piranga olivacea	Scarlet Tanager	U-T
Piranga rubra	Summer Tanager	C-SR
Plegadis falcinellus	Glossy Ibis	U-PR
Pluvialis squatarola	Black-bellied Plover	C-WV
Podilymbus podiceps	Pied-billed Grebe	FC-PR
Poecile carolinensis	Carolina Chickadee	C-SR
Polioptila caerulea	Blue-gray Gnatcatcher	C-SR, U-WV
Pooecetes gramineus	Vesper Sparrow	U-WV
Porzana carolina	Sora	FC-WV
Progne subis	Purple Martin	C-SR
Quiscalus major	Boat-tailed Grackle	C-PR
Quiscalus quiscula	Common Grackle	C-PR

Birds found on MCAS Beaufort, continued.

Scientific Name	Common Name*	Status**
Rallus limicola	Virginia Rail	FC-WV
Rallus longirostris	Clapper Rail	C-PR
Regulus calendula	Ruby-crowned Kinglet	C_WV
Regulus satrapa	Golden-crowned Kinglet	U-WV
Riparia riparia	Bank Swallow	FC-T
Rynchops niger	Black Skimmer	FC-PR
Sayornis phoebe	Eastern Phoebe	C-WV
Seiurus aurocapilla	Ovenbird	FC-T
Setophaga ruticilla	American Redstart	C-T
Sialia sialis	Eastern Bluebird	C-SR
Sitta carolinensis	White-breasted Nuthatch	FC-PR
Sitta pusilla	Brown-headed Nuthatch	C-SR
Sphyrapicus varius	Yellow-bellied Sapsucker	FC-WV
Spizella passerina	Chipping Sparrow	C-WV
Spizella pusilla	Field Sparrow	FC-WV
Stelgidopteryx serripennis	Northern Rough-winged Swallow	FC-SR
Sterna forsteri	Forster's Tern	FC-PR
Strix varia	Barred Owl	C-PR
Sturnella magna	Eastern Meadowlark	C-WV
Sturnus vulgaris	European Starling	C-PR
Tachycineta bicolor	Tree Swallow	C-WV
Thalasseus maximus	Royal Tern	C-PR
Thalasseus sandvicensis	Sandwich Tern	FC-SR
Thryothorus ludovicianus	Carolina Wren	C-PR
Toxostoma rufum	Brown Thrasher	C-PR
Tringa melanoleuca	Greater Yellowlegs	C-WV
Tringa semipalmata	Willet	C-PR
Troglodytes aedon	House Wren	FC-WV
Turdus migratorius	American Robin	C-WV, R-SR
Tyrannus tyrannus	Eastern Kingbird	C-SR
Vermivora celata	Orange-crowned Warbler	U-WV
Vireo flavifrons	Yellow-throated Vireo	FC-SR
Vireo griseus	White-eyed Vireo	FC-SR, U-WV
Vireo olivaceus	Red-eyed Vireo	C-SR
Vireo solitarius	Blue-headed Vireo	FC-WV
Wilsonia citrina	Hooded Warbler	FC-SR
Zenaida macroura	Mourning Dove	C-PR
Zonotrichia albicollis	White-throated Sparrow	C-WV
Zonotrichia leucophrys	White-crowned Sparrow	R-WV

* Common names follow 7th AOU checklist, 50th supplement
**Status codes are:

C = common, found most of the time in good numbers
FC = fairly common, found most of the time in lesser numbers
PR = permanent resident
R = rare, usually not found, often not found once per year
SR = summer resident
T = transient or migrant
U = uncommon, not always found even in appropriate habitat
VR = very rare, ~5-10 records in past century
WV = winter visitor or winter resident

Status codes based on Dennis Forsythe's "Birds of Coastal South Carolina" 2005 revision, and modified for MCAS.

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APPENDIX F

STANDARDS & GUIDELINES

STANDARDS & GUIDELINES

AIRFIELD GRASS MANAGEMENT: The airfield would be maintained as mowed grassland. Grass heights would be kept between 7 and 14 inches.

AIR QUALITY: Follow state BMPs and smoke management guidelines during prescribed burning to reduce potential for air quality problems.

BOAT LAUNCH SITES: Boating and canoeing are authorized on Round Island and Scout Ponds. No gas motors are allowed on either lake, but electric trolling motors are allowed. Boat launch sites that access the many tidal creeks and rivers near the Installation are available on Brickyard Creek (Main Station) and the Broad River (Laurel Bay). These sites would be maintained.

CAMPING AREAS: Camping is currently limited to one primitive campground used by the Scouts. There is potential for additional camping, and the Installation would initiate a survey to determine the need for additional primitive (tent) and motorized (RV) camping. If a demand exists, additional camping areas could be constructed on both the main station and Laurel Bay. The Installation would establish guidelines for the use of existing campgrounds to prevent degradation of the resource.

CONTROL OF BIRDS AROUND THE AIRFIELD: In addition to maintaining the airfield in a manner that reduces bird numbers, the Installation may drive or remove birds from the airfield using lethal and non-lethal techniques. All control measures would be recorded and reports would be provided to state and federal biologist yearly. All control measures would be in accordance with appropriate federal and state laws.

DOMESTIC LIVESTOCK: The Marine Corps Air Station (MCAS) Beaufort Lands would not be leased or otherwise be used for grazing livestock except for the one acre horse pasture/riding area at the Laurel Bay Riding Club.

EROSION CONTROL: Contractors would be required to use best management practices during all timber harvesting and planting operations.

EXOTIC & NUISANCE SPECIES: Exotic and nuisance plants and animals would be controlled as necessary to maintain native species and a safe flying environment. Control efforts would be coordinated with state and federal agencies to insure compatibility with the overall goals of this plan and compliance with all appropriate state and federal laws and regulations.

FIRE: Target prescribed burns of pine and pine/ hardwood stands every 3 to 5 years after the initial year of burning. Eventual goal is to have a mixture of winter and growing season burns. Burns would be used to reduce brush and understory forest species while favoring herbaceous growth. Wildfire suppression would occur whenever a wildfire is a danger to natural resources or the community. Suppression can include containment within existing stands using backfire techniques and other control techniques as determined by the Installation Natural Resource Manager on the spot. Prescribed fires would burn into and through wetlands, especially through the cypress-gum ponds scattered about the Installation.

FIRE LINES:. Fire lines may be planted in native grasses to reduce erosion. Rehabilitate old and new plowed fire lines to reduce drainage of wetlands and reduce soil erosion.

FISHERY MANAGEMENT: The Marine Corps is not responsible for managing the surrounding tidal marsh, but would provide access via boat ramps and fishing/observation piers or platforms. The five fishponds would be maintained as bass, bluegill, and channel catfish ponds for recreational fishing. Additional fishponds may be constructed so long as they are two miles from active runways. Ponds may be fertilized to increase fish production so long as the program is monitored and equipment is available to provide aeration should conditions become conducive to fish kills from low dissolved oxygen. Fish populations would be monitored no less than yearly with at least pond balance seine checks. The game warden would conduct creel checks at least weekly during April to October.

FISHING/OBSERVATION PLATFORMS/PIERS: Fishing is authorized on the Installation ponds in accordance with state regulations, but the Commanding Officer may restrict the take of fish to protect resources or allow for their more equitable distribution. Existing platforms at the two lakes, Albergottie Creek, and Laurel Bay would be maintained. The pier at Laurel Bay may be extended to provide better access to deep water. Additional structures may be added after an evaluation of user demand, compatibility with the mission, and ability of the resource to support the use.

FLOODPLAINS: Executive Order 11988 prohibits floodplain development except when other alternatives do not accomplish an agencies mission. The Marine Corps will comply with this order. The only natural resource related construction activities that might occur in wetlands would be maintenance and construction of recreational facilities such as a fishing pier.

FOOD PLOTS: Food plots would not be started or maintained on erodible soils. Food plots would be used to increase diversity, to attract deer away from clear zones and, make harvest more efficient. Food plots will not be placed within 1000 feet (300 meters) of runways. Food plots will not utilize crops and be small enough so the plots are unlikely to attract large numbers of birds like doves or geese. Crops likely to be used include beans and winter grasses that can be plowed under before seeds become attractive to birds.

FOSSILS, HISTORICAL ARTIFACTS, AND HUMAN REMAINS: Fossils will not be removed from Installation except as specifically provided by Station Order and in accordance with applicable laws and regulations. In the case of discovery of historical artifacts, archeological resources, and human remains, the discoverer and Installation personnel will comply with the Installation's inadvertent discovery plan. This will include compliance with the Native American Graves Protection and Repatriation Act and 36 CFR Part 800.13. The Installation's Integrated Cultural Resources Management Plan has more details.

GROUND DISTURBING ACTIVITIES: The requirements resulting from ground disturbing activities are addressed in the Installation's Integrated Cultural Resources Management Plan. These requirements address both where ground disturbance may occur and what to do in the event of an inadvertent discovery of fossils, historical artifacts, or human remains.

HIKING TRAILS: No hiking trails are present, and the small size of the Installation makes hiking unfeasible. Persons are authorized to walk along the forest roads and fire breaks in Laurel Bay.

HORSEBACK RIDING: A 1.5 mile riding trail is located near the stables at Laurel Bay. Horseback riding is not authorized anywhere else on the Installation.

HUNTING: Hunting is authorized in accordance with state and federal laws, but take may be restricted further by the Commanding Officer to protect resources or allow for their more equitable distribution.

HUNTER SAFETY: A hunter safety course is required prior to hunting on the Installation; information about legal and ethical obligations resulting from the inadvertent discovery of fossils, historical artifacts, and human remains will be presented to the hunters at any hunter safety course offered on the Installation.

INFRASTRUCTURE (Roads)**:** No new roads would be built for Natural Resource Management. The existing road system would be evaluated to see if any roads may be closed.

INSECT & DISEASE CONTROL: Southern Pine Beetles and other pest would be controlled when deemed necessary by the Installation Natural Resources Manager. Particular attention would be paid to the potential for the insect outbreak to move off of Marine Corps' property. Control would be by the removal of affected trees and the use of herbicides under the direction of a DoD certified pest control officer. All pesticide use would strictly follow EPA and state regulations.

LAW ENFORCEMENT: State and federal hunting, fishing, and natural resource protection laws and regulations would be enforced by the Installation Conservation Officer under the direction of the NREAO. State and federal law enforcement personnel would have access to the Installation and provide support to the Installation Game Warden. All natural resources management actions would be in compliance with appropriate state and federal laws and regulations.

MARITIME FOREST STANDS/AREAS: In addition to the mixed pine-hardwood maritime forest, small areas of maritime forest are scattered around the Installation as islands in the tidal marsh or as remnant areas in pine stands. These areas would be mapped and would generally not be managed as commercial forest. The slash and loblolly pine in these areas may be harvested when the areas are accessible by existing roads.

MINERALS: Minerals would not be sold or leased on MCAS Beaufort.

MIXED PINE/HARDWOOD MANAGEMENT: Because these stands have resulted from a wide range of edaphic and historical circumstances, management of individual stands would vary considerably. Initially, the stands would be evaluated by an ecologist and forester on a stand by stand basis to determine whether the mixed stand is a result of past cultural practices on a predominantly pine site or whether the stand is more of a hardwood site such as maritime forest in an early successional stage. In general, pine sites would be returned to pine management while maritime forest areas would be managed as such with an uneven aged method that preserves scenic and wildlife values while continuing to produce some commercial timber. Decisions would be specific to stands and areas smaller than stand size. Stands retained as mixed pine-hardwood or converted to hardwoods would be on a 100-year rotation. Stands with significant wildlife value or situated where harvest would have significant potential to impact cultural resources would not be harvested.

NATURE STUDY & SCENIC AREAS: Considerable opportunity is available for nature study at several locations. The housing areas at Laurel Bay and the main station abut forest areas with easy access by residents. The two lakes have cleared areas where nature based information may be presented to visitors. The fishing and observation platforms and piers provide scenic vistas and the opportunity for nature study. The walking/jogging trail along the marsh on the main station also provides many excellent vistas and opportunities for nature observation and study.

PESTICIDE USE: Herbicides, insecticides, fungicides, etc. would be used only under the direction of a DoD certified Pest Control Operator and only to achieve specific objectives established in this plan. Anticipated objectives of treatments include establishment of specific vegetative types, control of weeds and insect pest, control or elimination of exotic or invasive species, and rehabilitation of ponds.

PINE FOREST MANAGEMENT: Even-aged management would be the primary type of management. Pine stands would have an open canopy with 60-110 ft^2/acre basal area for pole timber & older stands. Stand age classes would be balanced by regenerating some stands prior to the rotation age; the rotation age would be around 80. Loblolly and slash pine stands suitable for growing longleaf pine would be converted to longleaf where feasible while balancing age class distributions. That is, not all suitable stands would be converted to longleaf pine at once. Regeneration cuts are limited to 80 acres in size. Fire management is discussed under "Fires."

PROTECTION OF NONGAME SPECIES: All native fish and wildlife, including mammals, birds, reptiles, and amphibians, are protected from killing or harassment except as provided for in Installation instructions regarding hunting, fishing, and pest control.

PUBLIC ACCESS: Public access is allowed under the following conditions: Limited public participation is allowed at MCAS Beaufort Sportsman Club hunts. No public access is allowed for fishing due to the small size of the freshwater ponds. Bird watching and similar activities may be conducted by groups of people under the auspices of bona fide organizations (such as the Audubon society) when coordinated in advance with the NREAO. The Nature trail along Albergottie Creek is also available to the public when arrangements are made in advance.

REFORESTATION: Occasionally unforested areas become available for growing timber due to changes in operations or other natural resource management. These areas may be reforested at the discretion of the NREAO.

SALVAGE & SNAGS : Killed timber may be sold if the sell meets the goals of this plan. When timber is salvaged, 6 snags per acre would be left in clumps where feasible. Individual snags would only be felled when they pose a direct hazard to property or abut roads or trails or when the snag's falling would threaten power lines. Snags are not required in clear cuts.

SOIL & WATER CONSERVATION: Comply with the state forestry commission's Best Management Practices during logging operations and exceed the practices as described below:

- Apply a 50' buffer around all jurisdictional wetlands in which clearcutting is prohibited except to prevent the spread of insects or disease.

- Maintain a minimum of 50 feet of basal area per acre within 80 feet from perennial streams and within 40 feet of intermittent streams. Do not cut trees along stream banks.

TARGET OR SENSITIVE SPECIES: Manage forest and other lands in a manner that promotes retention of target or sensitive species with average or better densities. These species would serve as surrogates for the ecosystem. Current target or sensitive species include Northern bobwhite, Bachman's sparrow, brown-headed nuthatch, Loggerhead Shrike, and Henslow's sparrow (all for pine forest), the southeastern myotis (hardwood and mixed pine-hardwood forest), and the painted bunting (for scrub shrub and maritime forest). Other target species will continue to be developed as more information is added.

THREATENED & ENDANGERED SPECIES: Manage all federally listed species present or adjacent to the Installation in consultation with the U. S. Fish & Wildlife Service. Continue surveys for species not yet located on the Installation with new surveys at least once every 5 years. Appendix I contains a biological assessment and management direction for management of the currently located pondberry and bald eagle.

Survey for state listed species in conjunction with surveys for federally listed species and as necessary for monitoring the status of the species on the installation. Maintain and enhance existing habitat for state listed species. Use state-listed species known to occur on the Installation as target or sensitive species.

VISUAL QUALITY & SCENIC RESOURCES: Visual quality would be maintained during all management operations. Logging areas and other natural resource management projects would be kept clean of trash. Prescribed fire would be used to reduce brush. In high visibility areas, slash would be scattered and the tops cut to lie within 2 feet of the ground so piles of woody debris are not obtrusive. Picturesque trees would not be removed for timber sale unless the area is being converted to a developed site and the development requires removal of the tree. Dumping of trash or woody debris would be prohibited in the woods and all construction, operations, or maintenance contracts would be modified within one year of approval of this plan to have liquidated damages clauses that protect the woods from dumping.

WETLANDS: In accordance with established DoD and Marine Corps procedures, wetlands would only be developed when avoidance of the wetlands would not support the military mission. When wetlands must be developed, their use would be minimized and mitigated. Furthermore, the installation would establish a buffer of 50 feet around the wetlands where development would be avoided unless necessary to support the mission. Selective logging would be allowed in the buffer, but mechanical soil disturbance such as root raking would not be allowed.

WHITE-TAILED DEER: Harvest deer in accordance with state regulations to limit population and provide outdoor recreation. Monitor species by data collected from harvested deer and additional counts as deemed necessary by the NREAO in coordination with the state biologists. Utilize all legal means, including lethal control using state issued depredation permits if necessary, to keep deer away from the runways where they pose a hazard to aircraft.

WILDFIRE: Wildfires would normally be controlled, contained, and extinguished; however, the Natural Resources and Environmental Affairs Officer has authority to allow controlled wildfires to continue burning following consultations with the state forestry commission and appropriate installation personnel if the fire would help achieve the goals of this plan.

WILDLIFE STRUCTURAL HABITAT: Structure utilized by wildlife includes snags, windthrown trees, decaying logs, stump holes, woodpiles, brush piles, old wind rows, and nest boxes. Snags may be left during clear cutting operations and would be left during timber salvage operation. Some existing windrows would be left to provide refuges for amphibians, reptiles, and small mammals. Nest boxes would be maintained, and new boxes may be added.

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APPENDIX G

BASIC MANAGEMENT PRACTICES

BASIC PRACTICES

LAND MANAGEMENT

OVERVIEW	Urban, improved areas will be managed to present a neat, pleasing appearance.
MOWING	Maintain the airfield grass between 7 and 14 inches high. Maintain lawns to provide a neat, pleasing appearance. Mow roadsides and other areas to reduce brush along right-of-ways.
INVASIVE EXOTIC CONTROL	Survey for invasive species used as ornamentals and remove and replace with native plants.
EROSION CONTROL	Survey Installation for erosion problems and eliminate problems as funding permits.
MONITORING	Monitor grounds maintenance by observations of grass height and conditions of trees, shrubs, and plants. Monitor soil erosion by observations of natural resources personnel.

FOREST MANAGEMENT

ANNUAL TIMBER HARVEST	As needed to maintain forest stands for timber and wildlife production and species diversity..
REGENERATION BLOCK SIZE	Up to 80 Acres.
ROTATION AGES	80 years for pine, 100 years for hardwood and mixed pine-hardwood, except around antennas and the tower where height restrictions for vision and radio transmission will be maintained by cutting whenever necessary to facilitate operation of the airfield.
BASAL AREA	Kept low to medium. Generally between 60 and 110 square feet per acre. Early thinning of young stands is conducted to promote the growth of herbaceous species that might not thrive in a stand under more intensive forest management.
INSECT & DISEASE CONTROL	Only control when necessary to prevent further damage; only salvage when necessary to prevent further damage or area damaged greater than ½ acre.
FIRE LINES	Use existing firebreaks and evaluate areas for reduction in number of breaks.
REGENERATION METHODS	Use natural regeneration unless conversion of type is necessary or failure of natural regeneration.
MONITORING	Continuous surveys with updates as needed.
PRESCRIBED FIRE	Every three years except in certain areas where fire would occur biannually. Mixture of growing season and non-growing season prescribed burns. May also burn for site preparation.
SCENIC VALUES	Values protected during harvest and other forestry operations as described in guidelines and standards.

BASIC PRACTICES

WILDLIFE MANAGEMENT

MONITORING	Use harvest data for all species plus nightlight counts of deer. Conduct counts of various indicator species yearly or more often if needed, and make observations of vegetative structure annually or bi-annually.
FOOD PLOTS & OTHER PLANTINGS	Keep between 50 and 200 acres of food plots, but keep as far from airfield as practical.
NEST BOXES	Utilize available funds for placement of nest boxes at opportune times.
SNAGS	Leave all snags that don't present an immediate threat to safety or security. In timber salvage areas, leave 6 snags per acre; leave largest diameter and tallest snags available where feasible.
HARVEST OF GAME SPECIES	Allow harvest in accordance with state and federal (where applicable) regulations except that harvest may be more restrictive to achieve specific management objectives. Harvest will also be restricted when necessary to father the military mission.
SMALL GAME MANAGEMENT	Generally follow practices in state's wildlife management guides. Emphasize bobwhite and fox squirrel. Discourage mourning dove.
WHITE-TAILED DEER MANAGEMENT	Maintain population below carrying capacity to reduce potential for collisions with aircraft and maintain heard health. Try various management techniques to keep deer away from runways.

FISH POND MANAGEMENT

SPECIES	Largemouth bass, bream, channel catfish.
FERTILIZATION & LIMING	Standard methods under state guidance.
FEEDING	None.
VEGETATION CONTROL	Control aquatic weeds in ponds and remove vegetation from pond banks for access at discretion of NREAO.
MONITORING	Creel checks, periodic seining when needed, and electro shocking as necessary.
HARVEST	Within state regulation.

FISH & WILDLIFE ORIENTED RECREATION

PUBLIC ACCESS	Allow existing, limited, and public access.
HUNTING	Allow hunting of deer and other species in accordance with state limits and seasons. Make effort to maintain deer herd near size that provides maximum productivity and low population.

BASIC PRACTICES

FISH & WILDLIFE ORIENTED RECREATION (CONT)

NATURE STUDY	Allow nature study whenever practical and not in conflict with the mission. Provide information kiosk, pamphlets, boat ramps, fishing piers, nature trails, etc. as funding permits.
HUNTER SAFETY COURSES	Provide hunter safety courses as needed.

APPENDIX H

PRESCRIBED FIRE

STANDARD

OPERATION PROCEDURES

PRESCRIBED FIRE PROCEDURES

Prescribed Fire Benefits

Prescribed fire is a vital element in efforts to prevent wildfire in the forests of Marine Corps Air Station (MCAS) Beaufort. Periodic prescribed fires prevent forest fuels (leaves, pine needles, twigs, sticks, and brush) from accumulating to dangerous levels. Minimizing fuel reduces the chance of a destructive wildfire that could destroy infrastructure and endanger human lives. With housing areas and munitions storage areas in close proximity of forests, proactive wildfire prevention is vitally important at MCAS Beaufort.

In addition to wildfire control, prescribed fire is an important tool in several areas of natural resource management. Many species of wildlife benefit from prescribed fire. Fire removes thick underbrush, making travel and feeding much easier for species such as quail, deer, and turkey. Fire also promotes growth and increases the nutritional value of important wildlife food plants such as legumes and leafy browse plants.

Prescribed fire enhances the survival of a significant number of plants and animals that have evolved with and are dependent on ecosystems influenced by periodic fires. Fire dependent state and/or federally listed species which occur or potentially occur at MCAS Beaufort include: gopher frog, flatwoods salamander, several species of pitcher plant, longleaf pine, several species of wild orchid, pondberry (*Lindera melissaefolium*), Canby's dropwort (*Oxypolis canbyi*), and chaff-seed (*Schwalbea americana*). Federal law mandates proactive management to enhance the survival of these species.

Prescribed fire is also an important timber management tool in southeastern pine forests. Fire is used to remove unwanted vegetation and logging debris before new pines are planted. It is a valuable tool to reduce unwanted competing vegetation in a growing pine stand. In addition, prescribed fire helps control several timber diseases and a variety of insect pests.

Finally, fire maintained forest stands are aesthetically pleasing to many people. The only practical way to maintain the open, park-like stands of pine that many people find attractive is with the use of prescribed fire.

In sum, from safety, economic, and environmental perspectives, prescribed fire is an important management tool available for natural resource management in southeastern pine forests. It is employed to prevent wildfires, manage timber, enhance wildlife habitat, facilitate recreational activities and promote aesthetic appeal in the forestlands of MCAS Beaufort.

Review and Approval

This notice outlines the operating and safety processes for conducting prescribed fires on board MCAS Beaufort. It will be reviewed annually and submitted with an Annual

Prescribed Fire Plan. The Natural Resources and Environmental Affairs Officer (NREAO) shall be responsible for the Prescribed Fire Program and this Standard Operating Procedure. Minor administrative changes to maintain accurate contact information may be made by the Natural Resources Manager outside this annual review cycle.

Notification and Educational Requirements

An annual campaign will inform and educate MCAS Beaufort personnel regarding the importance and occurrence of prescribed fire. Venues for informational/educational materials will include providing notices to base newspaper and sharing information with Laurel Bay and Pine Grove residents.

Notifications will be made the day of a prescribed burn. The Natural Resources Manager will notify: Environmental Department Head; Station Fire Department; Provost Marshall Office; Air Operations; Public Affairs Office and the Burton Fire Department; Duty Officer; Logistics Office . Notification will be made via phone or e-mail.

When a prescribed fire is being conducted adjacent to public roads warning signs reading, "Caution Controlled Burning," will be displayed during the activity. Depending on wind and smoke conditions, "Caution Smoke Ahead," signs will be posted on roads entering the fire areas.

Prescribed Fire Plan

The Natural Resources Manager will submit an Annual Prescribed Fire Plan consisting of a map of timberlands targeted for prescribed fire to MCAS Environmental Officer, and Southern Division, NAVFACENGCOM. The Annual Prescribed Fire Plan will be updated as fires are completed, and may be modified as the fire season progresses by the Natural Resources Manager.

A written Prescribed Fire Plan will be prepared for each area targeted for prescribed fire, as shown in Enclosure (1). The plan will be briefed prior to the fire and will be adhered to by personnel conducting the fire. Each plan will contain the following information:

Location and map of targeted area
Stand description and fuels
Smoke sensitive area information
Optimum and predicted weather conditions
Pre-fire checklist
Special/Safety precautions
Escape fire procedures
Evaluation information

Equipment List

See Enclosure (2).

Personal Protective Equipment (PPE)List

See Enclosure (3).

Personnel Requirements

All prescribed fires will be under the direction of a Prescribed Fire Manager. The Fire Manager will have overall responsibility on the day of the prescribed fire, will ensure all pre-actions are complete, direct activities, and maintain communications. At least one other experienced person will be present to assist the Fire Manager. Personnel working with the fire will receive specialized training and will operate only with close supervision of experienced Fire Managers. Specialized training, including training on the use/care/ limitation of PPE, shall be documented.

Prescribed Fire Procedures

Pre-Fire Prep and Planning – The Prescribed Fire Plan will be compiled, reviewed, and updated as required. Fire lines will be plowed and/or re-worked. Fire lines associated with planned fire areas will be visually inspected before a fire is conducted. Equipment will be checked, tested and loaded for transport.

Fire Day – On the morning of the fire, following an examination of the daily National Weather Service's Fire Weather Forecast (Enclosure (4)), a prescribed fire notification number will be requested and received from the S.C. Forestry Commission's District Fire Control Office.

Information required by the Commission for a permit number includes:

Fire Manager's name and contact numbers
County and location (SC Forestry Commission's grid #)
Fire type (hazard reduction, timber management, etc.)
Fuel tonnage estimate and acreage targeted
Name of and distance to nearest smoke sensitive area

Once a notification number has been received and required notifications made, the fire team will be assembled, provided a burn map, and briefed on the fire plan and safety issues. Policies and procedures will be reviewed, Operational Risk Management principles applied, and any special considerations reviewed. A final walk around inspection and check of vehicles and equipment will then be conducted.

At the target site the Natural Resources Fire Manager will identify a specific location to be used during the fire for a rally point and equipment staging. Communication

equipment will be tested and determined functional. The Fire Manager will give the go ahead and the base line backfire will be set to secure the downwind firebreak. Fire day conditions will dictate the use of additional backfires, strip-heading fires, flanking fires, and/or point source fires as the fire progresses. The fire team will remain on site until the entire perimeter of the target area is burned out and checked for smoldering snags. The Fire Manager will confirm the perimeter is secure, evaluate smoke conditions, account for all equipment and personnel.

Post-fire - The morning following a fire, the area will be inspected as soon as practicable. Smoke conditions will be evaluated and signage maintained or taken down depending on conditions. Fire results will be evaluated and noted on the Prescribed Fire Plan as soon as practicable. All fire equipment will be cleaned and checked for wear and repairs and/or replacements and made ready for the next fire. Containers and/or equipment requiring fuel and water will be re-charged, vehicles re-fueled, radios recharged, etc. Finally, prescribed fire records and maps will be completed and updated.

Enclosure 1

PRESCRIBED FIRE PLAN

Notification Information For SC Forestry Commission: 1-800-777-3473

NOTIFICATION #: _____ ACRES: _____ DATE: _____

FIRE MGR:

TIME OF FIRE : Start _____ Finish _____

LOCATION: Beaufort Co. - Grid #s: Horizontal _____ Vertical _____

TYPE OF BURN: Hazard Reduction; Understory Control; Wildlife Habitat Enhancement; (Objectives) Increase Accessibility; Enhance Aesthetics; Control Insects & Disease

FUEL TONNAGE (Acres X Fuel Load): Low – 3 Medium – 5 High - 10

NAME AND DISTANCE TO NEAREST DOWNWIND SMOKE SENSITIVE AREA: _____

STATE RD NAME & NUMBERS: US HWY 21 - OTHERS?

STAND DESCRIPTION & LOCATION (See Attached Map)

Overstory _____

_____

Understory _____

_____

Fuels Description _____

Total Available Fuel - Tons/Acre _____ Available Fuel - Tons/Acre _____

WEATHER FACTORS:

	DESIRED	PREDICTED	ACTUAL
Wind Dir & Speed			
Temperature			
Humidity (%)			
Vent Rate / Category Day			
Inversion			

* Transport Wind X Mixing Height = Ventilation Rate

Enclosure (1)

FIRE MGR. AND FIRE CREW:_____

_____

PRE-FIRE CHECKLIST: Permit Received ____ Notifications Made ____

Smoke Signs Up _____ Firebreak Check____ Safety Brief And Map Orientation _____

SPECIAL PRECAUTIONS: _____

_____

_____

_____

ESCAPED FIRE PROCEDURES: _____

_____

_____

NATUR. RESOUR. PRESCRIBED FIRE MGR. _____

FIRE DEPT. PRESCRIBED FIRE LIASION _____

EVALUATION

% Fuel Burned _____ % Crown Scorch _____ % Stem Kill _____

% Understory Kill _____ Other _____

COMMENTS and LESSONS LEARNED: _____

_____

_____

_____

_____

_____

Enclosure 2

PRESCRIBED FIRE EQUIPMENT

Vehicles:	John Deere (J. D.) 650 bulldozer
	J. D. 750 bulldozer with fire plow
	J. D. Gator (4x4 side by side ATV)
	Kabota (4x4 side by side ATV)
	One 4x4 ATV
	One 4x4 pick-up truck with 300 gal water sprayer
	One 4x4 pick-up truck with 90 gal water sprayer
	Portable compressed air tank for flat tires
Equipment Trailer:	Medium weight, single axial with ATV ramp
Fire Ignition Equipment	One five gal gas can for J. D. Gator/ATV and water sprayers
	Lighters/matches
	Five drip torches
Safety Gear:	Four fire extinguishers
	ATV helmets
	Misc. eye and ear protection
	Gloves
	First aid kit
	Water cooler and cups (ice water)
	Road signs – "Caution Controlled Burn in Progress"
	"Caution Smoke Ahead"
Hand Tools:	Four fire rakes
	Four fire swatters
	Four round point shovels
	Tool box and tools
	Chain and tow straps
Chain Saws:	Safety helmets and chaps
	Bar adjustment tool
	One can of gas/oil mix and bar oil
Communication:	Four radios and harnesses
	Burn plan and crew maps
Water Equip.:	Two backpack water sprayers
	Fire hydrant tool and hose

Enclosure 3

PERSONAL PROTECTIVE EQUIPMENT

Ignition and Fire Suppression Team
- Eye and hearing protection
- Leather boots
- Gloves
- Filtering masks
- Fire-resistant jump suits

ATV Operators
- ATV helmets
- Eye protection
- Gloves
- ATV Rider Course qualified

Chain Saw Operators
- Safety helmets and chaps
- Eye protection
- Hearing protection
- Leather boots
- Gloves

ENCLOSURE 4

FIRE WEATHER PLANNING FORECAST FOR SE SOUTH CAROLINA AND SE GEORGIA
NATIONAL WEATHER SERVICE CHARLESTON SC
339 AM EST TUE MAR 7 2006

...NEAR CRITICAL WIND SPEEDS EXPECTED TODAY...
...NEAR CRITICAL RELATIVE HUMIDITY VALUES EXPECTED TODAY...
...NEAR CRITICAL RELATIVE HUMIDITY VALUES EXPECTED WEDNESDAY...

.DISCUSSION...COOL DRY HIGH PRESSURE WILL SLIDE SOUTHEAST ACROSS THE AREA THROUGH WEDNESDAY NIGHT. BY THURSDAY MORNING...THE HIGH PRESSURE AREA WILL BECOME STATIONARY OFF THE SOUTHEAST COAST...BRINGING A RETURN OF WARMER AIR AND HIGHER MOISTURE BUT WILL ALSO HELP TO GENERALLY KEEP THE AREA FREE FROM PRECIPITATION.

SCZ048>051-072200-
BEAUFORT-COASTAL COLLETON-CHARLESTON-COASTAL JASPER-
INCLUDING THE CITIES OF...BEAUFORT...HILTON HEAD...EDISTO BEACH... CHARLESTON...JASPER
339 AM EST TUE MAR 7 2006

...NEAR CRITICAL WIND SPEEDS EXPECTED TODAY...
...NEAR CRITICAL RELATIVE HUMIDITY VALUES EXPECTED TODAY...
...NEAR CRITICAL RELATIVE HUMIDITY VALUES EXPECTED WEDNESDAY...

	TODAY	TONIGHT	WED
CLOUD COVER	MCLEAR	CLEAR	MCLEAR
CHANCE PRECIP /%/	0	0	0
PRECIP TYPE	NONE	NONE	NONE
MAX/MIN TEMP	61	35	66
AM 20 FT 2MIN WIND	N 13	G23	LGT/VAR
PM 20 FT 2MIN WIND	N 12	N 3	SE 5
PRECIP AMOUNT	0.00	0.00	0.00
PRECIP DURATION			
PRECIP BEGIN			
PRECIP END			
HUMIDITY	30	91	29
DSI	4	N/A	2
MIXING HGT	5000		3600
DISPERSION		7PM-8AM/PO	
TRANSPORT WIND	N 23		E 3
VENTILATION RATE	115000		10800

REMARKS...NONE.

APPENDIX I

2006 UPDATE TO THE

2001 BIOLOGICAL ASSESSMENT

OF THE

INTERGRATED NATURAL RESOURCES

MANAGEMENT PLAN

AND ITS EFFECTS ON

ENDANGERED & THREATENED SPECIES

AT THE

MARINE CORPS AIR STATION (MCAS)

BEAUFORT, SOUTH CAROLINA

The original 2001 biological assessment for implementation of the 2001 Integrated Natural Resources Management Plan (INRMP) has been evaluated as part of rewriting this INRMP. The conclusion that implementation of the plan is not likely to adversely affect any federally listed species remains unchanged; however, the situation has changed somewhat and those changes are documented here.

First, wood storks (*Mycteria americana*) are becoming more common in the area, but are still rare on MCAS Beaufort, and any effects from implementation of the INRMP will be insignificant, discountable, or beneficial.

In 2006 an additional bald eagle (*Haliaeetus leucocephalus*) nest has been located on the Installation (Figure X-2) on Jack's Island about 6500 feet north of the main runway. Eagles had been seen around the estuary north of the airfield for several years, so the nest is likely to be several years old. While the nest is in an area of aircraft operations, these operations were ongoing when the birds chose the nest site. Other than serving as noise and accident potential zones for flight operations, the Marine Corps does not use the island or surrounding marsh. The eagles' choice of the site while the Air Station was operating and probable use of the areas for two or three nesting seasons indicates that the operations are not adversely impacting the eagles nesting there. There is a slight potential for a collision between an eagle and an operating aircraft, but this is mitigated by the distance between the runway and the nest. Timber will not be harvested from this site. Federal ownership of the island will prevent development there. Based on these factors, any impacts of implementing this INRMP are expected to be insignificant, discountable or beneficial.

The endangered chaff-seed (*Schwalbea americana*), endangered Canby's dropwort *(Oxypolis canbyi*), endangered red-cockaded woodpecker (*Picoides borealis*), threatened piping plover (*Charadrius melodus*), and threatened flatwoods salamander (*Ambystoma cingulatum*) have not been located on the Installation in spite of efforts to locate them over the past 5 years. Implementation of the plan will not affect any of these species.

The federally listed species most affected by implementation of the INRMP is the Pondberry (*Lindera melissifolia*). The installation has funded twice yearly surveys of the species since 2001 through the local U. S. Fish and Wildlife Service (USFWS) office. (See below.) The gist of the report is that while stem counts have been fairly stable, very little flowering or fruiting has occurred even following a prescribed burn in 2003.

To try and increase flowering and fruiting, the Station and the USFWS are planning more active, adaptive management over the next several years. In addition to the ongoing monitoring, management will include:

Site A-2

Cut invasive plants inside the concerned marked area and treat the stems with a wick application of an approved herbicide. Dispose of excessive invasive plants and trees by cutting into small sections and scattering out debris throughout wooded area.

Site A-1

Cut and remove 19 sweet gum trees to allow more sunlight on concerned plants. Cut invasive plants inside the concerned marked area and treat the stems with a wick application of an approved herbicide. Dispose of excessive invasive plants and trees by cutting into small sections and scattering out debris throughout wooded area.

Site C-1

Cut and remove 15 trees to allow more sunlight on concerned plants. Cut invasive plants inside the concerned marked area and treat the stems with a wick application of an approved herbicide. Dispose of excessive invasive plants and trees by cutting into small sections and scattering out debris throughout wooded area. Apply appropriate fertilizer at recommended rate to marked “test plot” and monitor it’s effect on pondberry.

Site C-3

No action taken on this area at this time.

Site C-2

Cut and remove 7 pine trees and 1 wax myrtle tree to allow more sunlight on concerned plants. Cut invasive plants inside the concerned marked area and treat the stems with a wick application of an approved herbicide. Dispose of excessive invasive plants and trees by cutting into small sections and scattering out debris throughout wooded area.

Site B-2

Cut and remove all small sweet gum trees inside the marked concerned area to prevent overtaking by this invasive plant. Cut invasive plants inside the concerned marked area and treat the stems with a wick application of an approved herbicide. Dispose of excessive invasive plants and trees by cutting into small sections and scattering out debris throughout wooded area.

Site B-1

Cut invasive plants inside the concerned marked area and treat the stems with a wick application of an approved herbicide. Dispose of excessive invasive plants and trees by cutting into small sections and scattering out debris throughout wooded area.

All pesticide use will follow state and federal regulations.

As the stem, flower, and fruit counts continue and results of the management are evaluated, this program may be adapted, in complete cooperation with the Charleston Field Office of the USFWS, to improve flowering and fruiting at all of the sites. Overall, this program is expected to benefit pondberry by promoting flowering and fruiting. The only potential for adverse impacts will be if improper pesticide applications or a pesticide spill occur. Because of the knowledge and training of the personnel involved in the program, this potential is believed to be discountable and insignificant.

In order to evaluate the efficacy of the program, the signing agencies will examine, as a whole, stem counts, stem robustness (size), area of coverage, flowering, and fruiting on a yearly basis to determine if the overall status of Pondberry on MCAS Beaufort is stable or increasing. This evaluation will be included in each annual review. Management will be adjusted as necessary to conserve the species. Though unlikely, if there is disagreement among the agencies regarding the results of this review, an outside botanist may be called on to provide an independent evaluation of the situation.

Pondberry (*Lindera melissifolia*) Monitoring

Marine Corps Air Station, Beaufort, SC

FY 2001-2005

Prepared by:
Edwin M. EuDaly
Division of Ecological Services
Charleston, South Carolina

June 9, 2005

U.S. Fish and Wildlife Service
Southeast Region
Atlanta, Georgia

Pondberry (*Lindera melissifolia*) Monitoring

Introduction

Pondberry (*Lindera melissifolia*) is a deciduous shrub that can grow up to approximately 2 meters (6 feet) tall, and spreads vegetatively by stolons. Pale yellow flowers appear in the spring before the leaves. The bright red, 12-millimeter (one-half-inch) long, oval-shaped fruits mature in the fall. Pondberry is distinguished from the two other North American members of the genus (*Lindera benzoin* and *Lindera subcoriacea*) by its drooping, thin, membranaceous, and ovately to elliptically shaped leaves that have a strong, sassafras-like odor when crushed.

Reproduction seems to be primarily vegetative by means of stolons. The plants grow in clones of numerous stems which flower when little more than 2 to 3 years of age, but appear to live for only a few years. The dead stems are replaced by new ones that emerge from the rootstock. The plants bloom around March and are dioecious (male and female flowers are produced on separate plants). Mature fruits can be found on the plants in October, but they seem to have no reproductive value as no seedings have been observed at any of the known sites.

The species is presently known from seven counties in Arkansas, five counties in Georgia, four counties in Mississippi, two counties in Missouri and three counties in North Carolina. South Carolina has populations in Berkeley and Beaufort Counties. Pondberry is believed to be extirpated from three states, Alabama, Florida and Louisiana. There are 36 currently known locations for pondberry throughout the range, but the total number of plants has not been determined. Pondberry was federally listed as endangered in 1986.

In coastal areas, including South Carolina, pondberry grows on the margins of sinks, ponds and other depressions. However, in Arkansas and Mississippi and other interior areas, the plant is associated with wetland habitats such as bottomland and hardwoods. The plants can grow in shaded areas or in full sun.

Pondberry occurs at eight known sites on Marine Corps Air Station, Beaufort, SC (MCAS) and these sites are in three general locations (Figure 1). Because of the endangered status of this plant, the Marine Corps funded the Fish and Wildlife Service to monitor stem counts, stem height, flowering and fruiting on the base. The information can be used to determine whether current management is suitable to maintain the population and to guide future management.

Figure I-1. Pondberry monitoring sites – Beaufort MCAS

0 95 190 380 570 760 Meters

U.S. Fish & Wildlife Service
Charleston Field Office
Charleston, South Carolina

Methods

At each site the coverage of pondberry was determined by measuring the widest and longest extents occupied by the plants. Stems were manually counted using a tally counter. At sites A1, A2, B1, C2 and C3, it was feasible to count all stems because of the relatively low numbers. At sites B2 and C1, the large number of stems precluded a total count. At these sites, random one meter square areas were counted by using a PVC frame thrown into the colony. At sites B2 and C1, an attempt was made to sub-sample, in this manner, about 10% of the total number of stems present at each site. The number of stems in each size category was estimated and recorded for each site. Any flowers or fruits present were counted and recorded.

Results and Discussion

The following ten tables provide the pondberry *(Lindera melissifolia)* monitoring results for the fiscal years 2001-2005. Table 1 presents the plot sizes, which did not change over the study period. Tables 2 – 9 present all data on each plot for each sample date. Table 10 presents total stem counts for each sample date.

Table 1. Pondberry (*Lindera melissifolia*) plot size at sampling sites on Marine Corps Air Station Beaufort.

Plot #	Plot size
A1	15' radius
A2	6'x6'
B1	10' radius
B2	153'x40'
C1	45'x45'
C2	41'x29'
C3	53'x53'

Table 2. Pondberry (*Lindera melissifolia*) monitoring data from Fall 2001 at Marine Corps Air Station Beaufort.

Plot #	Date counted	Total stems	% of colony counted	% flowers	% fruits	% stems ≤ 20cm	% stems >20<40cm	% stems ≥40 cm
A1	6/14/2001	91	100	0	0	15	70	15
A2	8/1/2001	32	100	0	0	25	19	56
B1	10/5/2001	221	100	0	0	20	50	30
B2	10/5/2001	2051	7.8	0	0	30	40	30
C1	10/5/2001	3649	18.6	0	0	20	70	10
C2	10/5/2001	93	100	6	0	5	5	90
C3	10/5/2001	326	100	0	0	10	20	70

Table 3. Pondberry (Lindera melissifolia) monitoring data from Spring 2002 at Marine Corps Air Station Beaufort.

Plot #	Date	Total	% of colony	% flowers	% fruits	% stems	% stems	% stems
	counted	stems	counted			≤ 20cm	>20<40cm	≥40 cm
A1	4/29/2002	40	100	0	0	5	75	20
A2	4/29/2002	34	100	0	0	30	55	15
B1	4/29/2002	231	100	0	0	40	55	5
B2	4/29/2002	4448	9.0	0	0	5	85	10
C1	4/29/2002	1927	11.6	0	0	55	40	5
C2	4/29/2002	125	100	0	0	40	50	10
C3	4/29/2002	394	100	0	0	16	83	1

Table 4. Pondberry (Lindera melissifolia) monitoring data from Fall 2002 at Marine Corps Air Station Beaufort.

Plot #	Date	Total	% of colony	% flowers	% fruits	% stems	% stems	% stems
	counted	stems	counted			≤ 20cm	>20<40cm	≥40 cm
A1	10/16/2004	143	100	0	0	37	52	11
A2	10/16/2004	70	100	0	0	26	58	16
B1	10/16/2004	224	100	0	0	35	56	9
B2	10/18/2004	3565	10.4	0	0	27	55	18
C1	10/18/2004	3673	10.1	0	0	55	39	6
C2	10/16/2004	348	100	0	0	23	57	20
C3	10/16/2004	118	100	0	0	36	42	22

Table 5. Pondberry (Lindera melissifolia) monitoring data from Summer 2003 at Marine Corps Air Station Beaufort.

Plot #	Date	Total	% of colony	% flowers	% fruits	% stems	% stems	% stems
	counted	stems	counted			≤ 20cm	>20<40cm	≥40 cm
A1	6/23/2003	128	100	0	0	22	29	49
A2	6/23/2003	41	100	0	0	25	50	25
B1	6/23/2003	191	100	0	0	25	50	25
B2	6/23/2003	5515	5.4	0	0	20	60	20
C1	6/23/2003	2538	9.6	0	0	30	60	10
C2	6/23/2003	100	100	0	0	10	20	70
C3	6/23/2003	149	100	0	0	10	40	50

Table 6. Pondberry (*Lindera melissifolia*) monitoring data from Spring 2004 at Marine Corps Air Station Beaufort.

Plot #	Date	Total	% of colony	% flowers	% fruits	% stems	% stems	% stems
	counted	stems	counted			≤ 20cm	>20<40cm	≥40 cm
A1	4/7/2004	67	100	0	0	25	50	25
A2	4/7/2004	57	100	11	0	0	79	21
B1	4/7/2004	204	100	5	0	9	42	49
B2	4/7/2004	4258	11.5	0	0	25	37	38
C1	4/7/2004	2407	12.5	0	0	45	44	11
C2	4/7/2004	124	100	6	0	30	34	36
C3	4/7/2004	158	100	0	0	37	33	30

Table 7. Pondberry (Lindera melissifolia) monitoring data from Summer 2004 at Marine Corps Air Station Beaufort.

Plot #	Date	Total	% of colony	% flowers	% fruits	% stems	% stems	% stems
	counted	stems	counted			≤ 20cm	>20<40cm	≥40 cm
A1	9/21/2004*	101	100	0	0	53	47	0
A2	9/21/2004*	68	100	0	0	7	27	66
B1	7/21/2004	224	100	0	0	17	55	28
B2	7/21/2004	4380	8.2	0	0	18	29	53
C1	7/21/2004	2002	13.3	0	0	10	55	35
C2	7/21/2004	140	100	6	0	9	26	65
C3	7/21/2004	154	100	0	0	17	37	46

* Counted on 9/21/2004 because of failure to locate sites on 7/21/2004

Table 8. Pondberry (Lindera melissifolia) monitoring data from Fall 2004 at Marine Corps Air Station Beaufort.

Plot #	Date	Total	% of colony	% flowers	% fruits	% stems	% stems	% stems
	counted	stems	counted			≤ 20cm	>20<40cm	≥40 cm
A1	10/26/2004	116	100	0	0	36	49	15
A2	10/26/2004	68	100	0	0	10	0	90
B1	10/26/2004	202	100	0	0	25	48	27
B2	10/26/2004	4713	8.0	0	.02*	40	32	28
C1	10/26/2004	2420	9.2	0	0	65	24	11
C2	10/26/2004	127	100	0	0	16	50	34
C3	10/26/2004	182	100	0	0	24	39	37

* One plant

Table 9. Pondberry (*Lindera melissifolia*) monitoring data from Spring 2005 at Marine Corps Air Station Beaufort.

Plot #	Date counted	Total stems	% of colony counted	% flowers	% fruits	% stems ≤ 20cm	% stems >20<40cm	% stems ≥40 cm
A1	4/26/2005	45	100	0	0	20	60	20
A2	4/26/2005	69	100	0	0	0	40	60
B1	4/26/2005	149	100	0	0	30	50	20
B2	4/26/2005	3672	10.5	0	0	20	55	25
C1	4/26/2005	2632	8.5	0	0	20	70	10
C2	4/26/2005	137	100	6	0	5	20	75
C3	4/26/2005	168	100	0	0	20	40	40

Table 10. Total Pondberry (*Lindera melissifolia*stems from Fall 2001 to Spring 2005 at Marine Corps Air Station Beaufort.

Sample	Total Stems
Fall 2001	6463
Spring 2002	7199
Fall 2002	8141
Summer 2003	8662
Spring 2004	7275
Summer 2004	7069
Fall 2004	7828
Spring 2005	6872

Total stem counts ranged from 6463 in the Fall of 2001 to 8662 in the Summer of 2003 and the mean total stem count was 7438.6. As part of the on-going management plan for the MCAS pine forest, the entire study area was treated with a prescribed burn in January 2003. The burn did not appear to have any negative effect on total stem numbers. In addition, a severe drought affected the southeastern U. S. from 1998 to March 2003 and may have reduced the stem counts during 2001-2002. Based on the monitoring to date, the population on MCAS appears to be stable. Very few flowers and fruits were observed during the study.

Based on observations to date and information in the pondberry recovery plan, we have the following general management recommendations. Do not harvest or thin timber in the pondberry sites and a 200-foot buffer around the sites. During timber operations the 200-foot buffer should be marked around the sites and all mechanical equipment prohibited inside the buffer. All timber operations and any road building or road modifications in the study area should be planned to avoid hydraulic impacts such as

changes in water levels and flooding frequency and duration in the wetlands. Continue the prescribed burning program as currently planned. The Service can provide more detailed recommendations, if needed, during future coordination on specific projects.

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2001 BIOLOGICAL ASSESSMENT

OF THE

INTERGRATED NATURAL RESOURCES

MANAGEMENT PLAN

AND ITS EFFECTS ON

ENDANGERED & THREATENED SPECIES

AT THE

MARINE CORPS AIR STATION (MCAS)

BEAUFORT, SOUTH CAROLINA

APRIL 2001

APRIL 2001

BIOLOGICAL ASSESSMENT OF THE INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN & ITS EFFECTS ON ENDANGERED & THREATENED SPECIES AT THE MARINE CORPS AIR STATION, BEAUFORT, SOUTH CAROLINA

I. INTRODUCTION:

The federally endangered pondberry (*Lindera melissifolia*) occurs at three locations on Marine Corps Air Station (MCAS), Beaufort. Under the Integrated Natural Resources Management Plan (INRMP), the Installation will manage the endangered plant to maintain existing plant populations and periodically search for new or undiscovered populations on Installation lands. This appendix will serve as the main management instrument for the pondberry and as the Biological Assessment for management of the Installation's natural resources, regarding the species, under Section 7 of the Endangered Species Act (15 USC 1531 *et seq*.) and 50 CFR Part 402.

The bald eagle (*Haliaeetus leucocephalus*) has been seen flying over the Installation at least once, but has not been observed nesting, loafing or feeding on Station property. An active eagle nest is located about 150 meters from the boundary of Laurel Bay Housing Area.

The wood stork (*Mycteria americana*) has been seen flying over the Installation at least once, but has not been observed nesting, loafing or feeding on Station property. Implementation of the plan will not affect the wood stork.

The endangered chaff-seed (*Schwalbea americana*), endangered Canby's dropwort *(Oxypolis canbyi*), endangered due to similarity of appearance peregrine falcon (*Falco peregrinus*), endangered red-cockaded woodpecker (*Picoides borealis*), threatened piping plover (*Charadrius melodus*), and threatened flatwoods salamander (*Ambystoma cingulatum*) have not been located on the Installation in spite of efforts to locate them over the past 10 years. Implementation of the plan will not affect any of these species. No critical habitat exists on or near the Installation; implementation of the plan will not affect any critical habitat.

II. BACKGROUND & EXISTING SITUATION:

Pondberry was first discovered in the northwestern portion of the Installation in August 1990. The plants at one site were in fruit at the time of discovery. Both sites were open, ephemeral ponds. The pond at the first site discovered is a totally open grass sedge community surrounded by a planted loblolly pine stand started in 1976. The pondberry grows at the upper edge of the stand intermixed with bitter gallberry (*Ilex glabra*), *Carex sp*., sweet gum (*Liquidambar styraciflua*), *Leucothoe racemosa, Lyonia lucida, Clethra alnifolia, Gaylussacia* sp., *Symplocos tinctoria, Andropogon* sp., *Persea borbonia*, and *Woodwardia virginica*. The area around the pond was apparently bedded before being planted to loblolly pine (*Pinus taeda*), but the bedding does not appear to have extended into the pond.

The second site is more of a gum/cypress pond with grasses and sedges. This pond is part of the same 47-acre stand as the first site, but the pond was shallow enough that old wind rows go right through the site. The status of the pondberry at that time is unknown. The current overstory is sparse loblolly pine, pond cypress (*Taxodium ascendens*), water oak (*Quercus nigra*), live oak (*Q. virginiana*), and blackgum (*Nyssa sylvatica*). The pondberry grows intermixed with bitter gallberry, *Smilax glauca*, wax myrtle (*Myrica cerifera*), *Andropogon* sp., *Litsea aestivalis*, and *Hypericum* sp.

In May 1999, a third population was discovered in the same general vicinity as the other plants. This site is in a wet portion of a planted loblolly pine stand that originated in 1972. The site was prescribe burned the winter preceding discovery. The site was thinned the previous year. The pine overstory on this site is denser than the other two sites. Bitter gallberry is again the most common associate with *Vaccinium* sp., *Magnolia virginiana*, sweet gum, *Smilax* sp., *Woodwardia virginica, Arundinaria gigantia, Osmunda cinnamomea*, and *Woodwardia areolata* also present.

The general status of the plants has been monitored since their discovery. Both populations discovered in 1990 have expanded since discovery. The only other management actions have been protection from disturbance, including a ban on logging in the immediate vicinity of the plants and searches for new populations.

In December 1990, biologists counted stems and measured sites one and two. At the first site two separate areas were located on opposite sides of the pond at site one. One group was 16 by 12 feet. Stems were not counted due to the absence of leaves or enlarged flower buds. On the opposite side of the pond, spring flower buds were obvious; we counted 23 stems, and the group measured 16 by 6 feet.

At the second site (the altered site), we counted 168 stems in one group; the spring flower buds were again obvious. The site measured 35 by 48 feet. A second group was subsequently discovered, but the stems have never been counted.

In October 1999, biologists counted pondberry stems at sites one and three (the new site). Site one had 1,822 stems in two spots. Two of the three spots noted in an earlier report had grown together. This spot is now about 150 feet long by (up to) 27 feet wide with 1605 stems. The smaller spot on the opposite side of the pond is about 25 by 20 feet with 217 stems. The new, or third, site is about 33 by 24 feet in size with 147 stems. Stems were between 4 and 24 inches high at both counted sites. The second site was not counted in fall, 1999.

Biologists counted blooming pondberry stems on 1 and 9 March 2000. Only one group of stems, at site one, had female flowers. At this site, the northwest group had 9 male stems while the southeast group had 3 female stems. At site two, one group did not bloom; the second, or southeast group had 11 male stems. Only 2 male stems occurred at site three.

In general the pondberry colonies first discovered in 1990 and the surrounding forest have gotten considerably more brushy since the discovery of the pondberry. While no data has been collected on the increase in brush, the brush is now taller than a person's head around the ponds and areas that were once grassy are now brushy.

In summary, all known pondberry colonies on the Installation grow in planted loblolly pine stands that have previously been burned and were presumably site prepared with standard forest management techniques. The colonies are apparently expanding and a new colony has been discovered though it simply may have been missed during the surveys of the early 1990s. This apparent expansion has taken place even though the colonies have not burned (except for the newly discovered colony) and other brushy species are encroaching.

The bald eagle has been seen flying over the Installation and an active nest is located about 150 meters from the Laurel Bay Housing Area boundary.

Neither chaff-seed, Canby's dropwort, nor the flatwood's salamander are believed to occur on the installation; surveys in 1990-1992 and 1997-1999 failed to locate any of these species.

III. MANAGEMENT PLANNED:

1. Direct Actions.

Management of pondberry will consist of (1) monitoring the colonies at least twice yearly to evaluate colony health, reproduction, vigor, and growth; (2) searches for new colonies; (3) restricting forest harvest within 30 meters of the colonies' wetlands; (4) assessing hydrological systems to determine the area where drainage or other development will impact the colonies, and (5) prescribed burning as part of adjacent stand management. Burning will be a mixture of winter and growing season burns on a bi-annual or tri-annual basis.

For the bald eagle, a 750-foot primary zone and an additional 750-foot secondary zone have been established around the nest on Installation property. Forest harvest in the primary zone will only occur between May and September (inclusive) with harvest restricted to thinnings and group selection cuts up to 1/2 acres in size. Harvest in the secondary zone will only occur between May and September (inclusive) with no more than 20% of the area clear cut during any 10-year period. Other activities will continue as in the past. Management will also include continued observations for breeding birds.

The only actions planned for the remaining species are surveys to locate them should the previous surveys have failed to detect them or the species move onto the Installation.

2. Other Natural Resources Management Actions.

Forest management activities in the vicinity of the pondberry will include harvest (including thinning, salvage, and regeneration type harvest), site preparation, planting, direct seeding, prescribed fire, and timber stand improvement. All of these activities, except prescribed fire, will occur outside the 30-meter buffer around the pondberry colonies. No more than 15% of the Marine Corps land within 500 meters of the plants will be clearcut within any 6-year period. No pesticides will be used within 100 meters of the pondberry with the exception of tree injection of silvicides either for timber stand improvement or modification of the overstory to enhance habitat for pondberry in further consultation with the U. S. Fish & Wildlife Service (USFWS).

Wildlife management activities on Installation property in the vicinity of the pondberry and bald eagle will include prescribed fire, hunting, and various wildlife surveys.

Land management activities in the vicinity of the pondberry and bald eagle will include control of various exotic plants and erosion control.

3. Restrictions on Other Actions.

Spraying pesticides for mosquitoes or other invertebrate pest will not occur within 365 meters of the pondberry or within the primary or secondary zones of the bald eagle nest site. Aerial application of pesticides will not occur within the north section of the Air Station, that portion of the Air Station north of the runways (Figure X-1), or within the primary or secondary zones of the bald eagle nest site (Figure X-2).

All construction on the Installation will be reviewed by the Natural Resources and Environmental Affairs Officer (NREAO) for impacts to both species; consultation will be initiated if a "may effect" determination is made during the NREAO's review.

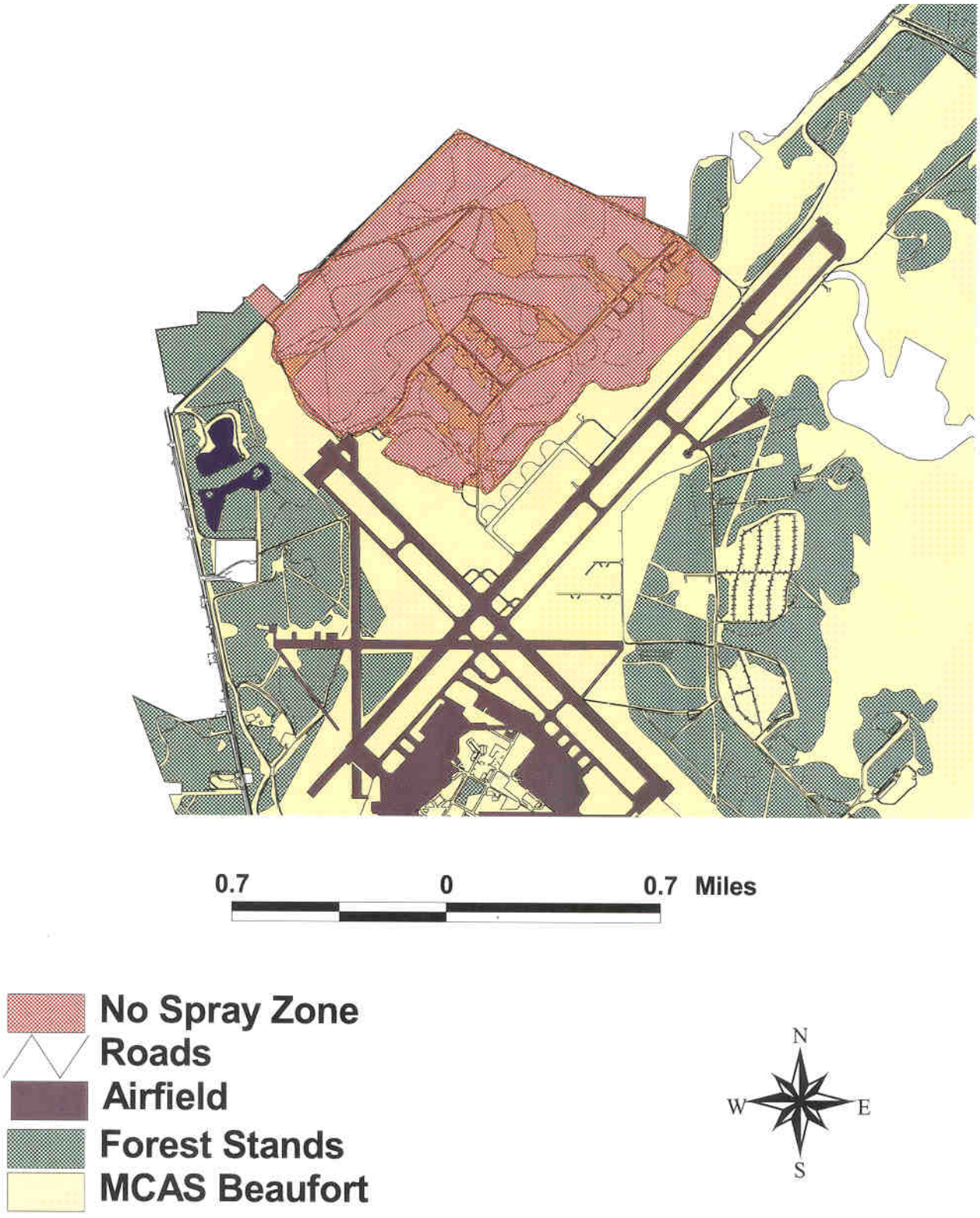

Figure I-2. No Aerial Spray Zone.

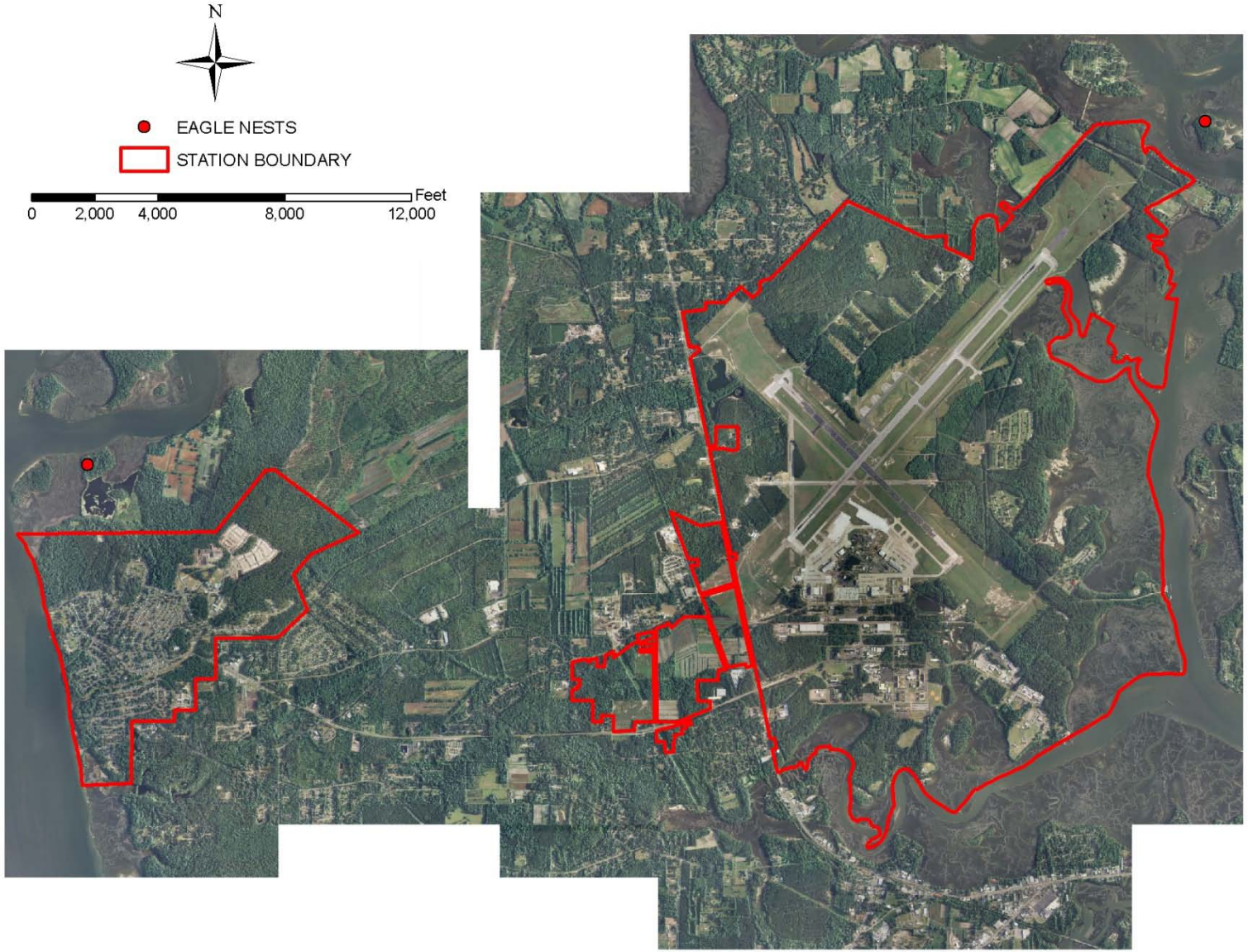

Figure I-3. Bald eagle nests as of 2006 at MCAS Beaufort, SC.

All personnel attached to the Security Department, Weapons Department, or Explosive Ordnance Disposal will be briefed regarding the pondberry and eagles and the potential for impacting the species to insure that no actions are taken that might inadvertently affect the species.

IV. EVALUATION OF EFFECTS:

1. Direct Management Actions.

Monitoring existing colonies and searching for new pondberry plants will not impact the species. Restricting forest harvest will positively impact both. The assessment of hydrologic conditions will not directly impact the pondberry, and the information will be used to evaluate future actions for impact to the species. The resumption of prescribed fire will presumably benefit this species, which grows in the fire adapted pine forest of the Southeast. To insure that these effects are beneficial, monitoring results will be provided to the USFWS, and management will be adapted, in consultation with the USFWS, in the manner believed to be suited to the species. Implementing restrictive zones around the bald eagle nest will benefit the species.

2. Other Natural Resources Management Actions.

The forest management activities, especially harvest and timber stand improvement actions have the greatest potential to affect the species. Restricting forest harvest to areas at least 30 meters from the pondberry colonies will protect the colonies from all activities except ditching, road building, and large herbicide spraying activities. No roads or ditches will be built as part of the natural resources program. No forest stands within the general vicinity (500 meters) of the colonies are scheduled to be regenerated during the planning period, so no large herbicide operations will occur as a part of the natural resources forestry program. The primary and secondary protection zones around the eagle nest and restrictions on harvest described earlier will prevent disturbance of nesting eagles by forest management actions.

For the pondberry, wildlife management activities such as hunting or wildlife surveys could result in persons walking through the colonies, but the effect on a colony would be insignificant and discountable. Persons conducting biological surveys know where the colonies are located, and hunters avoid brushy areas when walking through the woods. The effects of prescribed fire would be the same as discussed under forest management activities. Herbicide operation conducted to reduce the attractiveness of the airfield to birds (spraying weeds on the airfield) could result in the movement of herbicides in runoff from the airfield or in drift from the aerial spraying under improper conditions. Neither instance would affect the pondberry because the airfield is hydrologically down gradient from the colonies and because the airfield is separated from the nearest colony by 425 meters of pine and pine hardwood forest making the potential for drift extremely unlikely.

For the bald eagle, activities such as hunting, bird watching and nature observation have occurred within the primary and secondary zones around the nest since before the nest site was chosen and the nest constructed and used. These activities will not affect the bald eagle.

Control of exotic plants and erosion will occur around the Air Station. Since exact actions are not known at this time, an evaluation of impacts is impossible, but all actions planned within the vicinity of the pondberry colonies will be reviewed for potential impacts to the plants by the NREAO before implementation. If any activities are judged to "may affect" either species consultation will be reinitiated.

This plan prohibits off-road vehicle use on the Installation. This prohibition will benefit the species by eliminating the possibility of off-road vehicles damaging colonies of pondberry.

3. Restrictions on Other Actions.

These restrictions are all designed to benefit the pondberry or bald eagle and should do so, or at least cause no harm.

V. CONCLUSIONS:

Implementation of the INRMP may affect the pondberry and bald eagle, but is not likely to adversely affect the species. All effects will be either beneficial, insignificant, or discountable.

Implementation of the INRMP is not likely to adversely affect any listed species or critical habitat.

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APPENDIX J

Hunting and Fishing Order

(AIR STATION ORDER 1700.2E)

UNITED STATES MARINE CORPS
MARINE CORPS AIR STATION
BEAUFORT, SOUTH CAROLINA 29904-5001

ASO 1700.2E
NREAO

02 MAR 2009

AIR STATION ORDER 1700.2E

From: Commanding Officer
To: Distribution List

Subj: HUNTING, FISHING AND BOATING REGULATIONS FOR MARINE CORPS AIR STATION BEAUFORT, LAUREL BAY HOUSING AREAS AND TOWNSEND BOMBING RANGE, GEORGIA (SHORT TITLE: HUNTING, FISHING AND BOATING REGS)

Ref: (a) South Carolina Department of Natural Resources Hunting and Fishing Regulations (NOTAL)
(b) South Carolina Department of Natural Resources Boating Regulations (NOTAL)
(c) MCO 5500.6G
(d) MCO P5090.2A
(e) ASO 5512.5L
(f) ASO P11101.4F
(g) ASO 10570.1A
(h) Georgia Hunting Season and Regulations

Encl: (1) Hunting, Fishing, and Boating Regulations Procedural Guidance

1. Situation. References (a) and (b) establish South Carolina state hunting, fishing and boating regulations. Reference (c) establishes regulations involving the use of deadly force. Reference (d) promulgates to Marine Corps commands the environmental and natural resources responsibilities. References (e) and (f) establish specific regulations regarding the possession, use, carrying, registration and storage of privately owned firearms and weapons onboard this Air Station in accordance with this Order and applicable federal, state and county laws and regulations. Reference (g) establishes control and treatment of pets and wild animals. Reference (h) establishes Georgia hunting season and regulations.

2. Cancellation. ASO P1700.2D.

3. Mission. To establish regulations governing hunting, fishing and boating aboard MCAS Beaufort, Laurel Bay Housing area and Townsend Bombing Range, Georgia.

4. Execution. All personnel, military and civilian, will comply with the regulations contained in this Order.

5. Administration and Logistics. Changes to this Order are invited and should be submitted to the Natural Resources Environmental Affairs Office (NREAO) via the appropriate chain of command.

6. Command and Signal

a. Signal. This Order is effective the date signed.

b. Command. This Order is applicable to all tenant commands and staff sections.

J. R. SNIDER

DISTRIBUTION: B

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CHAPTER 1

GENERAL INFORMATION
(MCAS AND LAUREL BAY)

1. Application of Regulations. The regulations in this document are provided for MCAS Beaufort, Laurel Bay Housing and Townsend Bombing Range (TBR), Georgia. Chapters 1 through 6 and appendix A-I are applicable to MCAS Beaufort and Laurel Bay Housing unless specified otherwise. Hunting regulations for TBR are addressed in Chapter 7 and appendix J-P.

2. Enforcement of Regulations. The Chief Game Warden and the Provost Marshall's Office (PMO) will enforce hunting, fishing, and boating regulations and manage the issuance of hunting and fishing permits. Violator's base permits/game permits will be confiscated and privileges suspended until the case is resolved. The Chief Game Warden and PMO will review each violation and make recommendations to the Logistics Officer on a course of action (Appendix A).

3. Personnel Authorized to Hunt, Fish and Boat Aboard the Air Station and Laurel Bay. The following categories of personnel specified in this paragraph are authorized to hunt, fish or boat within the boundaries of this Air Station. Persons under the age of 16 must be accompanied by a licensed adult who is authorized by this paragraph to hunt, fish or boat. All requests for exceptions will be submitted in writing to the Chief Game Warden for approval. Authorized personnel include:

a. Active duty and retired military personnel and their dependents.

b. Civilian government and retired employees and their dependents.

c. Sponsored guests of personnel authorized to hunt, fish or boat, who are 16 years of age or older. The civilian government employee and the active duty or retired military member is responsible for the conduct of their guest(s) at all times. Sponsored guests must have a safety brief conducted by the Chief Game Warden prior to hunting aboard the Air Station.

d. Sponsored civilians will be limited to organized MCAS Sportsman Club hunts (large or small game) within MCAS areas.

4. Licensing

a. All persons, 16 years of age and older, hunting aboard MCAS Beaufort will carry a MCAS Hunting Permit, a valid South Carolina Hunting License and have attended the hunter's safety brief given by the Chief Game Warden or other individuals designated in writing by the Chief Game Warden.

b. All persons, 16 years of age or older, fishing in freshwater aboard MCAS Beaufort will have in their possession a MCAS Fishing Permit and a South Carolina Freshwater Fishing License. Temporary permits are available from the Chief Game Warden or at the Provost Marshal's Office (state fishing license or temporary license required).

c. All persons under 16 years of age must attend the hunter's safety brief and be accompanied by a licensed parent or Guardian to hunt. To fish in freshwater, persons under 16 years of age must be accompanied by a licensed adult 18 years of age or older. No state hunting/fishing license or base permit is needed if under 16 years of age.

d. The MCAS hunting/fishing permits will be valid until 30 June of each year. All permits will be requested utilizing Appendix B. All hunting/fishing permits are free to authorized personnel. Annual fishing permits can be obtained from the Chief Game Warden. Temporary fishing permits are available from the Chief Game Warden or the PMO Desk Sergeant. Hunting permits can only be obtained from the Chief Game Warden.

e. Prior to the issue of a permit to hunt/fish, the applicant will present applicable state licenses and appropriate identification.

f. Civilian and military dependent applicants will execute a Certificate of Release of the Government (Appendix C) releasing the government from all responsibility in case of accident or injury while hunting, fishing or boating. The completed certificate will be retained on file by the Chief Game Warden.

g. The applicant will certify familiarity with applicable current federal, state, and Air Station regulations and execute the Certificate of Understanding (Appendix D) attesting to same.

h. The applicant will present evidence of having attended a hunter's safety brief sponsored by the Chief Game Warden, during the current hunting season. There are no exceptions to this requirement. The safety lecture will be conducted at the Sportsman's Club or other location designated by the Chief Game Warden. Times and dates of the lecture will be determined during the hunting season.

i. The applicant will present evidence of having registered all firearms/weapons used for hunting in accordance with reference (e). Weapons registration is to be verified by the Chief Game Warden or individuals administering the safety brief by his/her signature on the permit application. Weapon registration must have the signature of the Pass and Identification Clerk. Only weapons used for hunting will be on the application for a permit. If at a later date a new weapon is purchased for hunting, it is the hunter's responsibility to have the weapon added to the hunting application, which is held on file by the Chief Game Warden. When a hunter borrows a weapon to hunt aboard the Air Station, they must possess a letter from the owner stating that the weapon is borrowed and must have a copy of the weapon's registration. The letter must also include the weapon owner's contact information.

j. Persons convicted of or against whom official administrative action has or is being taken for offense(s) involving use of drugs or Driving Under the Influence of intoxicating liquor or drugs will have all hunting privileges revoked. Privileges will not be reinstated unless installation drug/alcohol treatment/rehabilitation authorities consider the individual sufficiently rehabilitated and no longer a safety risk. If a person is PNG (Persona non grata) from base they are not authorized to hunt aboard the installation.

5. General Weapons/Firearms Regulations and Safety Precautions

a. Hunting aboard MCAS Beaufort is limited to shotguns of ten gauge or smaller bore, or archery. The use of .410 gauge shotguns for deer hunting is prohibited. The use of any other hunting means such as rifles, black powder guns, crossbows, nets, snares, or bait poisons is strictly prohibited.

b. Shotgun slugs will not be used due to safety because of the size of MCAS Beaufort and the close proximity of military family housing. Buck shot, number 3, up to and including number 000, will be used for deer hunting. Any device which makes a solid mass of shot in flight is prohibited. This restriction is not intended to restrict the use of choke devices on shotgun barrels.

c. No devices to muffle or minimize the report will be attached to a weapon or carried at any time.

d. Hunters will wear patches of international orange colored material, not less than one square foot in size, on both the front and rear portions of the upper body at all times.

e. All hunters shall strictly observe safety precautions in the use of shotguns and archery. Also, hunters should be aware of the noise hazards of firing a weapon.

f. All personal firearms/weapons used, possessed, or introduced aboard MCAS Beaufort or Laurel Bay Housing area will be registered with the MCAS Provost Marshal's Office. All persons will possess the appropriate registration card when using or transporting any firearm/weapon aboard MCAS Beaufort or Laurel Bay.

g. All personal firearms and weapons will be transported in the trunk of a vehicle, or bed of a truck, when not contained within a proper firearm/weapon case. All personal firearms and weapons will be transported unloaded with the action open. Ammunition will be separated from weapons. Under no circumstances will a firearm or weapon be transported or stored underneath a seat of a vehicle. The transportation of a firearm or weapon in a window rack as to be openly visible from outside the vehicle is prohibited.

h. Hunting/fishing knives and like instruments may be carried openly by a hunter while he is proceeding to the hunting/fishing area, while engaged in the sport and returning to quarters. Hunting/ fishing knives will not be routinely stored within a vehicle being operated aboard MCAS Beaufort.

6. Control and Treatment of Pets and Wildlife. Dogs which have attained the age of three months must be registered and have received the rabies inoculation as required by South Carolina law. A quarterly review by a licensed veterinarian will be turned into PMO, and a heartworm vaccination is strongly recommended. This applies to all dogs utilized for hunting aboard the Air Station. All dogs used for hunting aboard MCAS Beaufort will either be leashed at all times or will be outfitted with electronic tracking collars. In the event of Hurricane Condition II, the Sportsman's Club will be responsible for relocating the hunting dogs to a safe haven off MCAS Beaufort.

7. Miscellaneous

a. DO NOT FEED, molest or trap wildlife. Baiting for deer hunting is only permitted in areas 1A, 2, 4, 5, 6, 9, and 11 with approval from the Chief Game Warden. Feeding or trapping of wildlife aboard MCAS Beaufort or Laurel Bay Housing area is prohibited, except by persons designated by the Commanding Officer while in the performance of their assigned duties.

b. The trapping, feeding, killing or molesting of alligators is prohibited by law.

c. The killing or molesting of any non-game bird, e.g., eagles, ospreys, owls, hawks, or non-game wading bird, such as song birds, cardinals, and mockingbirds is prohibited and is a violation of federal law.

d. ONLY PORTABLE TREE STANDS ARE AUTHORIZED and must be removed at the conclusion of the day's hunt. Tree stands may be placed the evening or day before a hunt at the hunter's own risk. All personnel in a tree stand are required to use a safety strap. Unauthorized tree stands will be reported immediately to the Chief Game Warden for removal.

e. All illegally/accidentally-killed game (collision with motor vehicle, aircraft accident, poaching, etc.) will be immediately turned over to the Chief Game Warden. The Chief Game Warden will be notified directly or via the Military Police Desk Sergeant. In those instances where deer are inadvertently killed as the result of collision with a motor vehicle, the owner of the private vehicle may request that the deer be given to him for his personal use. The disposition of all deer or other game killed illegally or accidentally will be determined by the Chief Game Warden.

f. All night hunting for small game (example; raccoon hunting) will be approved by the Chief Game Warden and PMO.

g. The shining of hand-held or vehicle mounted lights or spotlights upon deer or other game during the hours of darkness for hunting, observing or harassing purposes is prohibited.

h. DO NOT LITTER. Hunters will pick up expended ammo casings.

i. Four wheeling/off-road driving by any type of motor vehicle is prohibited. All vehicles must be parked within 20 feet of perimeter road. No one will drive off an asphalt road or in a marked food plot at any time.

j. Area Use by Non-Hunters. Any person(s), unit, club, etc., desiring to use a designated hunting area or unassigned area is required to coordinate their request through the Chief Game Warden and PMO three (3) working days prior to the date requested. Requests for area use will be submitted in the form of a written request to the Chief Game Warden and PMO for specific areas to be used. The request will contain area to be reserved, points of contact and phone numbers. Mission essential use of an area will be considered a priority. Area #2 is used for training by the Corporal's School. Area #4 is used by MCCS paintball range. Hunters need to be aware of this, and that possible confrontations could occur if either party fails to properly sign in for these areas.

k. Hunters who checkout to go hunting an hour before daybreak must return the hunting-area pass and/or doe pass to PMO prior to reporting to their work section for duty. The hunter will not take the area pass or doe pass to his/her work section or keep it all day. In the same respect, no hunter will keep an area pass or doe pass overnight in order to hunt in the morning.

l. Non-sponsored civilian MCAS Sportsman's club members do not have exclusive rights to hunt aboard the Air Station

CHAPTER 2

CONSERVATION LAW ENFORCEMENT PROGRAM

1. Conservation Law Enforcement Program

a. The Natural Resources and Environmental Affairs Office (NREAO) shall supervise the Conservation Law Enforcement Program.

b. MCO 5090.4 establishes the policy and direction for the administration of the Conservation Law Enforcement Program on Marine Corps installations.

c. The Conservation Law Enforcement Program shall consist of a Chief Game Warden who will be selected in accordance with MCO 5090.4 and must maintain the standards set forth in that MCO. The Chief Game Warden will be a civilian employee.

d. The Chief Game Warden shall be assisted in the performance of his law enforcement duties by such other persons as may be approved by the PMO. These individuals will be referred to as Deputy Game Wardens, and shall be nominated by the PMO and approved by the Chief Game Warden and the Commanding Officer. Deputy Game Wardens shall be active duty personnel assigned to PMO and shall be selected on the basis of interest, maturity, and integrity.

e. The Chief Game Warden shall be assisted in the performance of his non-law enforcement duties by such other persons as may be approved by NREAO. These individuals will be referred to as Volunteer Game Wardens and can be active duty, retired, or civilian personnel. Volunteer Game Wardens shall be selected on the basis of interest, maturity, and integrity.

f. All personnel acting in the capacity of Deputy or Volunteer Game Warden will be thoroughly familiar with the provisions of references (a), (c), and (e), federal hunting regulations, and the contents of this Order. Deputy and Volunteer Game Wardens, while in performance of their duties, will come under the direct control of the Chief Game Warden. The duties as Deputy or Volunteer Game Warden will at no time conflict with normal work duties.

CHAPTER 3

HUNTING (INDIVIDUAL)

1. Individual Hunters. Each hunter must obtain a hunting area clearance by personally appearing before the Duty Game Warden/PMO Desk Sergeant. Hunters must adhere to check-out/check-in procedures as dictated by this Order. Hunters may check-out to a hunting area no earlier than one hour prior to sunrise and must check in from the hunting area no later than one hour after sunset. Individual hunters may check-out to only ONE area at a time and area changes will be accomplished only by personal appearance at the PMO Desk Sergeant's post. Dogs may be used for small game hunting. Individual hunters may not hunt areas where organized hunts are scheduled until after the organized hunt has been secured. Hunting areas and secondary roads leading to such areas are off-limits to privately owned vehicle traffic unless retrieving deer, which have already been located. Driving in a food plot or any off-road area is prohibited.

2. Hunting Areas. Individual hunting for all legal game is authorized in all hunting areas except Area 4. Area 5 is available for individual bow hunting during weekdays (excluding holidays) only. Areas 3, 7, 8, and 12 will be restricted during air operations when safety becomes a consideration. Area 2 will be restricted when in use by the Corporal's School. Hunting is prohibited within 200 yards of any inhabited area and the Air Station Ordnance bunker areas. Hunters will not enter any area in which troops are training. Shooting across perimeter road, aircraft runways, and aircraft parking ramps or taxiways is prohibited. Hunters shall not discharge weapons towards an inhabited area, runway or perimeter road, if within 200 yards of same. Hunters may not hunt closer than 100 feet to any active runway/taxiway/perimeter road. Organized hunts may request an exception for active paved roadways on a case-by-case basis. The Commanding Officer may from time-to-time authorize special hunts in other areas of MCAS Beaufort.

3. Archery Hunting

a. Archery hunting will be in accordance with reference (a) and the provisions of this Order.

b. All license and identification requirements applicable to other types of hunting apply to archery hunting.

c. Hunting with a bow and arrow for all legal game is permitted during the regular hunting season in all approved hunting areas.

d. The minimum head width of arrows and rated pull will be in accordance with reference (a).

e. Poison, explosive, or barbed arrows are prohibited. A barbed arrow is defined as an arrow, which has points or barbs protruding in such a manner as to prevent the arrow from being removed from the point of penetration without tearing the flesh of the bird or animal.

f. All arrows used for hunting on MCAS Beaufort will have the name of the owner clearly labeled on the shaft of the arrow.

g. The "flu-flu" type arrow will be used for elevated shots. These arrows are the same as those used in bird or squirrel hunting.

h. The use of crossbows is prohibited.

i. Individuals engaged in archery hunting are prohibited from using or carrying firearms.

j. Areas 1A, and 9 are reserved for archery hunting only.

k. Area 4 is reserved for organized hunts only.

l. Area 5 is reserved for organized hunts only on weekends and holidays. It is available for archery hunting only on all other days.

4. Seasons And Limits

a. Open seasons and bag limits are established by reference (a) and applicable Federal regulations.

b. The issuance of "doe tags" will be the responsibility of the Duty Game Warden/PMO.

c. Bear, duck, and turkey WILL NOT be hunted.

5. Deer Hunting

a. Hunting deer is authorized only during the regular deer hunting season as established by the state wildlife department.

b. Deer may only be taken during organized hunts or by individual gun and archery hunting, subject to the following special regulations:

(1) Only male deer with plainly visible two inch antlers may be taken unless the hunter has been issued a "doe tag."

(2) Spotted deer (fawns) will not be harvested.

(3) No one shall, at any time, take any deer while it is in the water. Also, deer will not be taken while a hunter is in a boat.

(4) No deer taken will be field dressed. A disposal site, located at the Sportsman's Club, is available to all hunters for deer harvested at MCAS. Rules regarding use of the site are posted at the Club and must be followed in order to use it. Failure to follow the rules will result in the site being closed and possible administrative action. All deer taken on MCAS must have the weight and sex recorded prior to being cleaned. One-half of each deer lower jaw bone will be removed and turned in to the Chief Game Warden for storage and later released to the South Carolina State Biologist's Office

at the conclusion of the hunting season. At such times as state game biologists are working with Air Station officials, hunters may be required to surrender parts of the deer for scientific study.

6. Harvest Report. All individual hunters or the Hunt master will initiate the Harvest Report (Appendix F) when checking in with the Duty Game Warden/PMO Desk Sergeant after concluding the hunt for the day. Harvest reports will be completed when game is taken.

CHAPTER 4

HUNTING (ORGANIZED)

1. Organized Hunts

a. Organized hunting is authorized in all areas except area 1A, with the approval of the Chief Game Warden. Area 4 is reserved for organized hunts only. Area 5 is reserved for organized hunts during weekends and holidays only. Bow hunting is authorized in Area 5 during non-holiday weekdays.

b. During organized hunts, hunters are to be placed on designated stands near roadways/paths routinely used by pedestrians. The Hunt Master will ensure the following safety precautions are accomplished:

(1) Prior to the commencement of the hunt, a sign not less than 24 inches by 18 inches, with a red background and white lettering not less than two inches in height stating: "CAUTION DEER HUNT IN PROGRESS," will be conspicuously placed on all roads/paths approaching the area to be hunted.

(2) Prior to commencement of a hunt in area 1, a sign not less than 24 inches by 18 inches, with a red background and white lettering not less than two inches in height stating: "FISH POND SECURED FOR ORGANIZED DEER HUNT BY ORDER OF THE COMMANDING OFFICER (ASO P1700.2)," will be conspicuously placed at the entrance to Round Island Pond. Scout Pond will not be secured from fishing due to the facilities belonging to MWR.

(3) Immediately upon termination of the hunt, the hunt signs will be removed from the roads/paths.

(4) In the event that an intruder is observed, the first hunter observing the intruder will, by voice command, secure the hunt. Intruders, regardless of grade, should be fully identified and referred to the Chief Game Warden for violation of this Manual.

a. Hunting in any area or place other than described above is prohibited. The Commanding Officer may from time to time authorize special hunts in other areas of MCAS Beaufort.

(1) According to NAVSEA OP-5 (p.2-6, para 2.1 6.3b), all hunters in areas 2 and 3 will not venture beyond a 200 yard inboard boundary surrounding the Air Station Ordnance and Missile Facility. As a caution, these areas are prominently marked with yellow paint on the outboard side of trees.

(2) The sounding of a vehicle horn or PA system will be used to contact hunters in an area. Once heard, hunters must leave the hunting area and go to the Hunt Master, Game Warden or PMO representative for instructions.

b. All organized hunts will be managed and controlled by a designated Hunt Master. Designated Hunt Masters will be responsible for the organization, proper conduct and safety of the hunt and will be guided in the

performance of their duties by the special orders for Hunt Masters contained in Appendix G.

c. Organized hunts may be conducted each Saturday, Sunday and holiday during the regular hunting season, subject to the written approval of the Chief Game Warden. Hunt requests will be submitted no later than 0900, on the Wednesday prior to the hunt. Special organized hunts may be conducted during the week upon approval of the Chief Game Warden and the Commanding Officer.

d. When organized hunts are conducted in a particular hunting area, only those persons participating as Hunt Masters or Game Wardens in the performance of their duties will be allowed to use secondary dirt roads in the hunting area. All other open hunting areas will be available for individual hunting for all legal game.

e. Organized hunters will comply with Chapter 3, paragraphs 4, 5 and 6.

2. Small And Big Game Organized Hunts. The representative of an organized hunt will submit a written request to the Chief Game Warden for specific area(s) to be hunted. The request will contain the type of game to be hunted, time(s), date(s) and area(s) to be reserved, the names, addresses, duty and home phone numbers of the Hunt Master and Assistant Hunt Master and the approximate number of hunters expected to participate. No more than two hunting areas will be reserved for an organized hunt on any given day. Hunt Masters may check out a hunting area one hour prior to sunrise and must clear the hunting area prior to one hour after sunset, except raccoon hunts authorized by NREAO. The Hunt Master must personally check in with the Duty Game Warden/PMO Desk Sergeant and provide him a complete roster of persons attending the hunt. This roster will contain the name, social security number and Air Station hunting permit number of each hunter involved. At the conclusion of the hunt, the Hunt Master will personally check out with the Duty Game Warden or the PMO Desk Sergeant.

3. Coordinating Activities. The MCAS Sportsman's Club has agreed to and will accomplish the following:

a. The Club President and all members may be requested to assist the Provost Marshal, Chief Game Warden or Officer of the Day in coordinating and conducting searches for missing persons.

b. Coordinate with S-4/NREAO and PMO in matters pertaining to conservation of natural resources.

c. Cooperate with the S-4/NREAO to promote good wildlife management and conservation practices.

d. Individual and hunting parties will be responsible for securing dogs at the conclusion of the hunt.

CHAPTER 5

FISHING

1. Fishing. Fishing will be in accordance with the regulations contained in reference (a) and the provisions of this Order.

a. In addition, users of the fishponds will comply with the following instructions:

(1) Swimming and wading are not permitted in the fishponds.

(2) Boats less than 18 feet long may be used. Boats will be equipped with at least one oar and at least one life preserver or Coast Guard approved flotation device per occupant. Electric trolling motors may be used. Use of gasoline motors is prohibited. Boats with gas motors may be used in the ponds but the motor must be raised. Inflatable crafts, and belly boats are not authorized, due to alligators in the ponds.

(3) Live fish will not be used as bait. Possession of live fish in areas adjacent to the ponds is strictly prohibited. This helps to prevent unauthorized stocking of undesirable types of fish. This includes all fish: minnows, crappie, shiners, etc.

(4) No firearms, pellet, air guns, bows, crossbows, arrows or other dangerous weapons are permitted on or around the ponds except as authorized for organized hunts.

(5) Open fires are prohibited without written approval from the Commanding Officer. Portable grills are allowed for picnics in the immediate area of the ponds.

(6) Fishing is permitted with rods or poles only, with a limit of two rods or poles per person. Nets, seines and trot lines are prohibited.

(7) Limits per person per day:

1. All limits are subject to change at the discretion of the Chief Game Warden. Changes will be posted on boards at all station ponds and piers.

2. Bass: three per day per person, minimum length of 16 inches. Return undersize bass to water immediately.

3. Bream (Blue gill/Sunfish): Unlimited. Do not return to pond regardless of size.

4. Catfish: three per day per person, minimum length of 16 inches. Return undersize catfish to water immediately.

5. Grass Carp: Return all to pond unharmed.

(8) Night fishing at the base ponds is authorized and all participating personnel will check in and out with PMO, via phone. The night fishing period spans between half an hour after sunset and half an hour before sunrise.

b. The following regulations pertaining to size, limit, equipment and methods of taking saltwater fish, crabs and shrimp coincide with South Carolina state regulations and will be enforced throughout the Air Station. These regulations particularly apply to the areas known as the Air Station Marina, Laurel Bay Boat Ramp, Laurel Bay Pier, SAR Pond, Shady Point Picnic Area, and the pier near the Sportsman's Club. The Fuel Pier is not an authorized fishing or shrimping area.

(1) No state saltwater fishing license or stamp is required to fish from the above areas.

(2) Shrimping will be allowed only with hoop or cast nets. Baiting for shrimp within 50 yards of a fixed structure or from a fixed structure is not permitted. Properly licensed personnel are permitted to bait for shrimp from the shore or from a boat.

(3) Giggers must have a valid South Carolina Gigging License in their possession.

(4) Crab pots are limited to two pots per person and are subject to applicable South Carolina state regulations. Crabs less than five inches, measured from tip of point across the back of the shell, must be returned to the water immediately. Female crabs bearing eggs from which the egg pouch has been removed may not be kept and must be returned to the water immediately. One claw may be taken from stone crabs. All stone crabs must be immediately returned to the water so long as one claw remains.

(5) All game fish caught must be in accordance with South Carolina state regulations regarding size and limits.

(6) Catches may not be sold or bartered.

c. All personnel will adhere to safety rules while aboard MCAS Beaufort and at Laurel Bay Pier, boat ramps and docks. All children ages 12 and under are required to wear life jackets while on or near the Laurel Bay Pier and all boat ramps, docks, and will be under parental supervision.

CHAPTER 6

BOATING

1. Boating

a. All boating in the waters under the jurisdiction of the Commanding Officer will be in accordance with reference (b).

b. Person(s) are considered to be boating when operating boats in any waters under the jurisdiction of the Commanding Officer, to include the use of launching and docking facilities and/or the use of any land or excursion there from.

c. South Carolina has adopted the U.S. Coast Guard navigation rules concerning boating safety.

d. All boaters are encouraged to take a boating safety course sponsored by the U.S. Coast Guard Auxiliary.

2. Registration Of Boats. Without exception, all vessels with propulsion machinery installed or attached must be registered. Vessels having valid registrations from other states may use South Carolina waters for 90 consecutive days before they are required to have South Carolina registration.

3. Equipment Requirement For Boats

a. Under 16 feet:

(1) Coast Guard approved personal flotation device (PFD), type 1, 2, 3 or 5 for each person aboard with proper fit and serviceability.

(2) Valid South Carolina registration or see paragraph 2 of this chapter.

(3) Navigation lights between sunset and sunrise.

(4) Horn or whistle.

(5) If equipped with enclosed fuel tanks or inboard engine, must have one fire extinguisher and ventilation system.

b. 16 feet or greater, but under 26 feet:

(1) Valid South Carolina registration.

(2) Wearable Coast Guard approved PFD for each person, type 1, 2, 3, or 5. Type 5 PFDs may not be substituted on children weighing less than 90lbs.

(3) One Coast Guard type 4 (throwable) PFD onboard.

(4) Navigation lights between sunset and sunrise.

(5) Horn or whistle.

(6) If equipped with enclosed fuel tanks or inboard engine, must have one fire extinguisher and ventilation system.

c. 26 feet but under 65 feet, see reference (b).

4. Types of Personal Flotation Devices

a. Classification

(1) Type 1 PFD's (off-shore devices) have the most buoyancy and are designed to turn most unconscious persons in the face down positions to vertical or slightly backward positions. The type 1 device provides the greatest protection to its wearer and is the most effective PFD.

(2) Type 2 PFD's (near-shore devices) are wearable devices designed to turn some persons to vertical or slightly backward positions in the water. The turning action is not as pronounced as that of the type 1.

(3) Type 3 PFD's (flotation aids) are wearable devices designed to keep conscious persons floating in vertical or slightly backward positions with their heads above water. The type 3 PFD has little or no turning ability and may not turn an unconscious person upright in the water.

(4) Type 4 PFD's (throwable devices) is a device designed to be thrown to a person in the water and grasped and held by the user until rescued. IT IS NOT DESIGNED TO BE WORN.

(5) Type 5 PFD's (special use devices) are designed for use only when engaged in the activities specified on their labels.

b. To be acceptable, every flotation device must meet the following conditions:

(1) Be U.S. Coast Guard approved.

(2) Be of an appropriate size for the intended wearer (except type 4).

(3) Be in serviceable condition.

(4) Wearable PFD's must be readily accessible. Throwable devices must be immediately available.

(5) Type 5 PFD's must be used according to the instructions.

c. Legal requirements for PFD's

(6) A boat 16 feet or longer in length must be equipped with one type 1, 2, 3, or 5 (wearable) PFD for each person in the boat in addition to one type 4 (throwable) PFD in case someone falls overboard.

(7) A boat less then 16 feet in length or any canoe or kayak must be equipped with one type 1, 2, 3, or 5 PFD for each person on board. Children under 12 years of age are required to wear a Type 1, 2, 3, or 5 PFD. The PFD must be fastened and of the proper size for the child.

(8) Each person riding on a personal watercraft or being towed behind a vessel must wear a US Coast Guard approved Type 1, 2, 3, or 5 PFD.

5. Safety Tips

a. Before leaving:

(1) Tell someone where you are going and when you expect to return.

(2) Check the weather forecast.

(3) Ventilate engine compartment before starting engine.

(4) Ensure your boat has all required safety equipment.

b. Persons aboard:

(1) Do not overload.

(2) Avoid horseplay.

(3) Have PFD's readily available for everyone.

(4) Small children, non-swimmers and handicapped persons should always wear PFD's when boating.

(5) Remain seated in small boats.

c. While underway:

(1) Know and obey the navigation rules.

(2) Keep a proper lookout.

(3) Proceed at a slow speed in harbors and confined areas.

(4) Avoid excessive speeds.

(5) Watch your wake; you are responsible for any injury or damage caused by your wake.

(6) In rough waters, stay low in the boat and meet waves head-on or at a slight angle.

(7) Pass red buoys on your right when traveling upstream or when heading south on the intercoastal waterway.

(8) Tying to buoys or anchoring in channels is forbidden.

(9) Carry tools for minor repairs.

d. Weather:

(1) Observe cloud formations.

(2) Play it safe and head for shore if the wind increases.

e. NOAA weather service radio frequencies are:

(1) WX-1: 162.55 MHz

(2) WX-2: 162.400 MHz

(3) WX-3: 162.475 MHz

CHAPTER 7

HUNTING, TOWNSEND BOMBING RANGE, GEORGIA

1. General. TBR is under the jurisdiction of the Commanding Officer, MCAS Beaufort. This document provides guidance on the implementation of the hunting program at TBR. It applies to all hunters at TBR. All state and federal game laws will be enforced at TBR by the MCAS Beaufort Chief Game Warden, Georgia Department of Natural Resources (GADNR), and other personnel having enforcement authority. Any person entering onto TBR must obey all laws, rules, regulations, schedules, permits, or other written or oral directives issued by the Commanding Officer, MCAS Beaufort. Failure to comply with this written instruction will result in forfeiture of future privileges and written notification being sent to the appropriate authorities. All disciplinary action for a violation will be based on the appropriate local, state, or federal laws. Military personnel assigned to TBR will be responsible for the overall execution of the TBR Hunting Program and will be referred to as Hunt Managers. All activities and instructions in this document are subject to change without notice in order to support the military training mission.

a. Only hunting from an elevated (minimum 10' high) tree stand is permitted under strict supervision of professional wildlife management by county, state, and federal personnel. Public hunting is permitted in areas not contained within military training areas (impact zone, target sites, endangered species primary zones, etc.). The Chief Hunt Manager will not be allowed to hunt during scheduled public hunts, but may accrue one hour of hunt time for every hour spent on duty as Chief Hunt Manager as approved by the TBR Range Control Officer (RCO). Assistant Hunt Managers can also accrue one hour of hunt time for every hour spent on duty as an Assistant Hunt Manager. The RCO must approve hunting areas before hunting is allowed. Shotgun (slugs only - buckshot is prohibited), muzzleloader, rifles (.22-cal. or larger centerfires with expanding bullets), and archery hunting is permitted on the dates established and authorized by the RCO. All other weapons are prohibited.

b. Final approval for specific hunting dates for all seasons will be set through coordination between TBR natural resources personnel and the RCO. The seasons will fall within the dates established by the GADNR. All hunts are subject to change or cancellation at any time.

c. The frequency of hunts will be determined by the RCO in coordination with natural resource personnel.

d. Proposed hunting dates and application procedures will be published in the local county newspaper prior to each seasonal drawing.

e. Permit applications will be made available prior to the hunting season. Applications will be received until a specified published date prior to each seasonal drawing.

f. Applications will be randomly drawn for approved hunt areas. This system will allow an adult and one guest (who may be a minor child) to hunt the same area. Guest information will be disclosed on the permit application. Applications with names (either hunter or guest) showing-up twice on different applications will be disqualified and may be excluded from

future hunts for two (2) years. False information will disqualify an applicant and guest for two (2) years. Additional applications will be drawn for alternate hunt permits in case of a no-show.

g. Once drawn, the applicants will be notified and given specific hunting instructions. If an applicant is not drawn after two consecutive seasons of applying to hunt, that applicant will be automatically given priority to hunt the third (3rd) consecutive season based on available space and will be given specific written hunting regulations and instructions.

h. Hunting permits will be issued to successful applicants at no cost. Permits will be issued for deer only; however, wild hogs and coyotes may be harvested according to GADNR regulations.

i. Hunters are encouraged to participate in the "Hunters for the Hungry Program."

2. Responsibilities

a. Military personnel assigned to TBR will be responsible for the overall execution of the TBR Hunting Program and will be referred to as Hunt Managers.

b. In order to avoid conflicts with the military training mission, hunting dates for the season will be set by the RCO and fully coordinated with TBR Natural Resources Personnel.

c. The Commanding Officer, MCAS Beaufort is responsible for establishing TBR hunting regulations. The MCAS Beaufort Game Warden, GADNR and other federal wildlife law enforcement officers may enforce laws and instructions. All activities and instructions in this document are subject to change based on the current military training mission.

d. The Chief Hunt Manager will:

(1) Conduct hunt drawings to include registering all hunters, issuing hunt and vehicle permits.

(2) Ensure that every hunter completes an emergency data card and signs a "hold harmless agreement."

(3) Record alleged violations of this policy and forward alleged violations along with the report to the MCAS Game Warden and the RCO for appropriate action.

(4) Contact law enforcement personnel as necessary to enforce state and federal game laws. All citations will only be written by the MCAS Beaufort Game Warden, GADNR, and/or other federal wildlife law enforcement officers. These officers will be called to TBR as needed and available.

(5) Check hunters in and out and open and close range security gates as needed or specified by this document.

(6) Be available at range control at all times during an approved hunt in order to support hunter emergencies and other needs.

(7) Receive special instructions from the RCO as necessary.

(8) Check sign-in/out register prior to terminating the hunt to ensure everyone has returned safely from hunting.

(9) Conduct range safety briefings for all hunters.

e. TBR Hunt Managers, the Chief Game Warden, and/or MCAS Beaufort natural resources personnel will conduct threatened and endangered species briefings for all hunters as well as any other relevant natural resources issues.

3. Policy

a. Safety of individuals, protection of property, security and resource-based management are the primary concerns at TBR. Therefore, this policy must be complied with in every aspect to have a safe hunting program.

b. Permits will be issued by TBR or its authorized representative. Any person may submit a permit application to hunt at TBR provided that they are 21 years of age or older, possess a valid GADNR Hunting License to include a big game permit if applicable, have an acceptable hunter safety course certificate, have no prior GADNR violations, and have accomplished all other requirements within this document. Eligible hunters may bring a guest; the guest must meet all requirements for hunting as stated in the current "Georgia Hunting Seasons & Regulations" to include an approved hunter safety course. The eligible hunter assumes total responsibility of their guest. Guests must adhere to all requirements in this document. An under-aged guest (less than 21 years old) must stay within sight and voice contact and no more than 100 yards away from the eligible hunter. Guests carrying a weapon must have an acceptable hunter safety course certificate. All hunters and guest will comply with the instructions given by the Chief Game Warden and the Chief Hunt Manager at all times.

c. The killing of animals not authorized in this document or the destruction of plants will not be tolerated. Violators will be prosecuted to the fullest extent of the law.

d. Individuals hunting will be issued a parking permit. The parking permit will be placed inside of the windshield so that it may be read from outside the vehicle.

e. Individuals desiring to hunt at TBR must complete an application package to include a "hold harmless agreement."

f. The season limit on deer will follow Georgia State Law with exceptions as stated next: one of the two antlered deer must have a minimum of 4 points, one inch or larger, on one side of the antlers with the exceptions being that the other antlered deer must have a minimum of 3 points on one side of the antlers and only one deer per hunter taken per day. Killing of fawns (spotted deer) is prohibited. In order to ensure that deer are being properly managed, at least one jawbone will be extracted for GADNR analysis. Hunters will also properly record the killas stated in he current "Georgia Hunting Seasons & Regulations."

g. All hunting will be done from an elevated (minimum 10' high) stand furnished by the hunter. Stalking is not permitted.

h. In the event that a hunter is mobility-impaired, the hunter may hunt from a ground blind.

i. Hunters must wear at least 500 square inches of hunter orange as an outer garment above the waist at all times. In addition, a hunter orange hat must be worn to and from the stand.

j. Hunters will not drive spikes, nails, screws or any other device into trees for any reason. Climbing tree stands must be designed not to cut into or damage tree bark. Climbing tree stands will be approved by Natural Resources Personnel before climbing any tree. All stands will be securely fastened to a tree. Additionally, hunters will be securely fastened to the stand and/or tree with an approved manufactured hunter safety harness.

k. Hunters are not permitted to carry handguns at any time on TBR.

l. Hunters will sign-in/out and enter/exit TBR only at the range gate located on Georgia Highway 57.

m. Hunt dates and sign-in/out times will be set prior to each season to correspond with state hunting seasons and military training needs. After the daily sign-in time the gate will be locked until the daily sign-out time. Late arrivals may not be allowed to hunt for that day. In case of an emergency or a need to leave such as to process an early kill, hunters must contact the Chief Hunt Manager at the check station in order to exit outside of that days prescribed exit time. All daily hunting will commence and cease according to the current "Georgia Hunting Seasons and Regulations," and all hunters will report back to the check station no later than one hour after official sunset.

n. While hunting, hunters must remain within the assigned hunting area. Before proceeding into another hunt area to recover game, hunters will contact TBR personnel to verify that no other hunters are present, or scheduled to be in the area you intend to enter. Use common sense and courtesy when searching for downed deer or hogs.

o. All weapons will remain unloaded with actions open until the hunter is secured on the stand.

p. Hunters will be allowed time to scout and set stands prior to the hunt as determined by the RCO. Once stands are set in place, hunters must annotate the locations on a map provide by TBR.

q. Hunters will check deer and hogs at the designated TBR check station. The Chief Hunt Manager will collect physiological data such as weights, ages, sex, jawbone extraction, and antler dimensions.

r. All empty shells and/or litter will be removed from the stand area.

s. No field dressing deer or hogs. Persons handling wild hogs will use gloves due to the possible transmission of diseases. All animals taken must be transported to the game check station for biological data collection.

t. Absolutely no baiting, feeding, and/or trapping any wildlife.

u. Hunter all terrain vehicle (ATV) use on TBR is prohibited.

v. Use of alcohol and/or illegal drugs is prohibited.

w. Hunters must have in their possession during the hunt a flashlight, compass or Geographic Position System (GPS), and a whistle. A cellular telephone is encouraged but is optional.

4. Hunting Penalities

Offense	Citation
Firing a weapon indiscriminately endangering personal life	Withdraw privileges permanently
Permitting another to use hunting license or permit	Withdraw privileges permanently, notifying DNR
Killing, transporting, or possessing game taken illegally	Withdraw privileges permanently, notifying DNR
Unauthorized hunting at night	Withdraw privileges permanently, notifying DNR
Hunting out of	Withdraw privileges season permanently, notifying DNR
Shooting from vehicle	Withdraw privileges permanently, notifying DNR
Unauthorized use, carrying or transporting of weapon	Withdraw privileges permanently
Unauthorized use of dogs	Withdraw privileges permanently
Hunting without required licenses & permit in possession	Withdraw privileges to 2 years, notifying DNR
Hunting or scouting in a closed or unassigned area	Withdraw privileges for 1 year
Other violations of state, federal, or installations regulation covered in this policy	Withdraw privileges permanently, notifying DNR
Failure to sign out or in before or after hunting	Withdraw privileges for the season
Selling, offering to sell, or buying game taken from TBR	Withdraw privileges permanently, notifying DNR
Use of alcoholic beverage or under influence of alcohol or drugs while hunting	Withdraw privileges permanently

Offense	Citation
Use of traps, snares, nets or any other devices to catch game	Withdraw privileges permanently
Failure to check in deer taken on TBR for biological data collection	Withdraw privileges permanently, notifying DNR
Taking any game animal not specifically authorized in this policy	Withdraw privileges permanently and prosecuting to fullest extend of the law
Failure to display parking permit for the season	Withdraw privileges
Failure to update application current information	Withdraw privileges with for the season
Failure to show for a permitted hunt without a five day notification	Disqualified from applying for future hunts for 2 years
Taking spotted deer (fawns)	Withdraw privileges permanently

APPENDIX A

VIOLATION CODES (MCAS)

1. ENFORCEMENT PROCEDURES. Violators will have all hunting and fishing privileges suspended aboard MCAS Beaufort and the Laurel Bay Housing Area until the cited violations have been adjudicated.

a. Referral to State or Federal Law Enforcement Authorities. In cases where administrative sanctions do not adequately address the serious nature of the misconduct, violations may be reported to State and Federal law enforcement authorities for possible criminal prosecution in State or Federal court. It will be at the discretion of the Chief or Deputy Game Warden as whether to make an arrest or to address a violation administratively.

b. Other. Hunting/Fishing violations committed by civilians or guests not affiliated with MCAS Beaufort will be cited by means of a DD Form 1805 violation notice. Violators may have to appear in Federal Magistrate Court and/or forfeit a collateral amount of money. Violations of State and Federal regulations relating to hunting and fishing occurring on MCAS Beaufort or the Laurel Bay Housing Area will be acted upon by the Logistics Officer as follows:

CODE	VIOLATION	FIRST OFFENSE	SECOND OFFENSE	THIRD OFFENSE
(1)	Taking threatened or endangered species	Revoke		
(2)	Taking protected birds or animals	Revoke		
(3)	Taking deer with aid of artificial light	Revoke		
(4)	Taking wild turkey	Revoke		
(5)	Taking wild birds by placement of salt, grain, fruit or other food (baiting for game)	Revoke		
(6)	Hunting out of season	Revoke		
(7)	Unlawfully taking birds or animals by the use of traps, nets, snares or other prohibited device	Revoke		
(8)	Hunting while under the influence of any intoxicating beverage or narcotic drug	Revoke		

CODE	VIOLATION	FIRST OFFENSE	SECOND OFFENSE	THIRD OFFENSE
(9)	Hunting while under suspension for violation of any hunting regulation	Revoke		
(10)	Unlawfully buying, selling bartering, or offering to sell game	Revoke		
(11)	Shooting signs or other government property	Revoke		
(12)	Hunting without state hunting license/big game permit	Revoke		
(13)	Hunting without obtaining an Air Station hunting permit	Revoke		
(14)	Unauthorized taking of fish with drugs, chemicals, or poisoned bait	Revoke		
(15)	Taking fish with explosives	Revoke		
(16)	Taking of freshwater game fish with nets or traps	Revoke		
(17)	Introducing any species of exotic fish into Air Station ponds	Revoke		
(18)	Deliberately introducing any physical or chemical pollutant into any Air Station pond	Revoke		
(19)	Buying or selling gamefish	Revoke		
(20)	Firing any firearm into or near Air Station ponds	Revoke		
(21)	Possessing or transporting loaded firearms in vehicle	Suspend 6 months	Revoke	
(22)	Hunting in closed or unauthorized areas	Suspend 6 months	Revoke	

CODE	VIOLATION	FIRST OFFENSE	SECOND OFFENSE	THIRD OFFENSE
(23)	Littering	Suspend 6 months	Revoke	
(24)	Failure to check-out area pass prior to hunting	Suspend 6 months	Revoke	
(25)	Taking animals by placement of salt, grain, fruit, etc. baiting for game)	Suspend 6 months	Revoke	
(26)	Baiting for shrimp	Suspend 6 months	Revoke	
(27)	Fishing without state freshwater fishing license	Suspend 3 months	Revoke	
(28)	Failure to wear inter-national orange	Suspend 3 months	Suspend 6 months	Revoke
(29)	Failure to check in area pass one hour after sunset	Suspend 3 months	Suspend 6 months	Revoke
(30)	Exceeding the daily possession limit	Suspend 3 months	Suspend 6 months	Revoke
(31)	Fishing with live bait (excluding worms, crickets, mudpuppies, etc..)	Suspend 3 months	Suspend 6 months	Revoke
(32)	Taking freshwater game with spears, harpoons, gigs or bow and arrow	Suspend 3 months	Suspend 6 months	Revoke
(33)	Possession of undersize fish or crabs (salt or freshwater)	Suspend 3 months	Suspend 6 months	Revoke
(34)	Exceeding catch limit on fish 3 months (salt or freshwater)	Suspend 6 months	Suspend	Revoke
(35)	Violation of any other fishing regulations not	Suspend 3 months	Suspend 6 months	Revoke
(36)	Violation of any other hunting regulation of this Order not specifically listed above	Suspend 3 months	Suspend 6 months	Revoke

CODE	VIOLATION	FIRST OFFENSE	SECOND OFFENSE	THIRD OFFENSE
(37)	Fishing without proper Air Station fishing permit	Suspend 1 month	Suspend 3 months	Revoke
(38)	Fishing with trout lines or set hooks in freshwater	Suspend 1 month	Suspend 3 months	Revoke
(39)	Grabbing for game fish	Suspend 1 month	Suspend 3 months	
(40)	Driving in an Unauthorized Area: i.e. Food Plot, Marsh, or any off Road Area.	Traffic Court	Traffic Court	

APENDIX B

APPLICATION FOR HUNTING/FISHING PERMIT

THIS APPLICATION IS FOR (Check One):

**HUNTING ___ FISHING ___ **COMBO ___ MCAS PERMIT# _____

NAME: _____ SC LIC#:_____

RANK/GRADE/CIV: _____SSN:_____ UNIT/SPONSOR:_____

TELEPHONE: Daytime: _____ Alternate: _____

HOME ADDRESS: _____

DOB: _____ WT: _____ HT: _____

HAIR: _____ EYES: _____ BLOOD TYPE: _____

VEHICLE: Make:_____ Model:_____ License Plate:_____

IN CASE OF EMERGENCY NOTIFY:

NAME: _____ RELATIONSHIP: _____

ADDRESS: _____
TELEPHONE: Daytime: _____ Alternate: _____

MANDATORY SAFETY LECTURE GIVEN ON THE FOLLOWING DATE BY THE BELOW NAME INSTRUCTOR:

DATE: _____ INSTRUCTOR: _____

** NOTE: WITHOUT THE SIGNATURE OF THE HUNTING SAFETY INSTRUCTOR, THE PERMIT CANNOT BE ISSUED (ASO P1700.2).

ORDNANCE SAFETY LECTURE GIVEN ON THE FOLLOWING DATE BY THE BELOW NAMED INSTRUCTOR:

DATE: _____INSTRUCTOR: _____

NOTE: ORDNANCE SAFETY BRIEF REQUIRED TO HUNT AREAS 2 AND 3.

THE BELOW LISTED FIREARMS/WEAPONS HAVE BEEN REGISTERED WITH MCAS MILITARY POLICE (INCLUDE MAKE, MODEL AND SERIAL NUMBER):

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

DATE: _____ VERIFIED BY _____

I hereby certify that I have read and understand the provisions of ASO P1700.2D, which pertain to the rules and regulations for hunting and fishing aboard MCAS Beaufort and Laurel Bay, South Carolina. I understand that all firearms/weapons I bring on to MCAS Beaufort or Laurel Bay must be registered with the Pass and Identification Office, and when not secured within the trunk of my vehicle, contained within the appropriate case. I further understand all firearms will be transported unloaded with the action open.

DATE: _____ SIGNATURE OF APPLICANT _____

APPENDIX C

CERTIFICATE OF RELEASE OF THE GOVERNMENT

DATE_____

1. In consideration for permission granted to me to enter upon the United States Marine Corps Air Station Beaufort, South Carolina, and the Laurel Bay Housing Area, Laurel Bay, South Carolina, and there engage in hunting, fishing or boating, the undersigned, _____, does hereby agree as follows:

a. I will indemnify and hold harmless the United States Government, including all its subdivisions, its officers, agents, military personnel and employees from all liability under the Federal Torts Claims Act (28 U. S. C. Section 1346(b), 267 et seq.) or otherwise, for death or injury to all persons, or loss or damage to the property of all persons resulting from any use of the premises.

b. I hereby waive any and all claims from injuries which may be suffered by me in the course of such use of Federal property, including but not limited to any injury suffered by reason of accidental shooting by others, and/or by accidental discharge of firearms, explosives, etc., which may be caused by the negligence or fault of any other person, whether employed by the Federal Government or not, or any other injury, of any nature whatsoever, which may be suffered by me while on Marine Corps Air Station Beaufort, South Carolina, and/or Laurel Bay Housing Area, Laurel Bay, South Carolina as a result of the permission which is cited herein above.

SIGNATURE _____

PRINT NAME _____

HOME ADDRESS _____

WITNESS _____

APPENDIX D

CERTIFICATE OF UNDERSTANDING

Date _____

1. I have read, understand and will comply with Air Station Order P1700.2D. I further understand that any violation thereof subjects me to possible disciplinary, civil and/or administrative action as appropriate, and may prohibit me from hunting, fishing or boating on the Marine Corps Air Station Beaufort, South Carolina, and on the Laurel Bay Housing Area, Laurel Bay, South Carolina in the future.

SIGNATURE _____

PRINT NAME _____

ADDRESS _____

_____

WITNESS

APPENDIX E

SAFETY LECTURE PLAN

1. PERSONNEL AUTHORIZED TO HUNT

a. Active Duty and Dependents (Dependents over 16 years of age must have a hunting/fishing license).

b. Retired Military and Dependents.

c. Bona fide House Guests (Must have temporary hunting/ fishing pass).

d. Civilian Employees and Dependents.

e. Authorized non-sponsored civilians (up to 20) as part of MCAS Sportsman Club organized hunts.

2. TYPES OF HUNTING

a. Organized hunts: Small game and deer.

b. Individual: Small game and deer

c. Bow/Shotgun Hunting: Small game and deer

3. TYPES OF FIREARMS/WEAPONS TO BE REGISTERED WITH PMO

a. Deer Hunting: Shotgun with buckshot and bows with broad heads.

b. Small Game: Shotgun with bird shot and bows with flu-flu type arrows.

4. SEASONS AS PRESCRIBED BY SOUTH CAROLINA LAW

a. Bow Hunting: All areas.

b. Small Game Hunting: All areas.

c. Organized Hunts: All hunting areas within MCAS.

5. HUNT RESTRICTIONS/REQUIREMENTS

a. No hunting out-of-season game.

b. Hunters will obtain two area passes from the PMO Desk Sergeant or Duty Game Warden. One pass will be displayed on the vehicle dashboard, and one pass will be carried on the hunter's person.

c. All hunters will wear international orange while hunting at all times.

d. All hunters will use a safety restraint while in a tree stand.

6. SAFETY

a. Hunting near roads, runways and buildings.

b. Shooting across runways and paved roads.

c. Sound shots.

d. Ten Commandments of Safety.

e. Hunter should be aware of the noise hazards of firing weapons.

APPENDIX F

HARVEST REPORT

MCAS 1700/11 (Rev 11-07)

Note When exiting a hunting area for any reason, hunters, must check back into the Duty Game Warden/PMO Desk Sgt to return all area passes.

DATE_____

AREA(S) HUNTED: _____ TIME OUT: _____ TIME BACK: _____
_____ _____ _____
_____ _____ _____

NUMBER OF HUNTERS: _____

GAME HUNTED (Circle Applicable Game):

DEER SQUIRREL RABBIT OTHER:_____

GAME HARVESTED (Number): _____

DEER	SQUIRREL	RABBIT	OTHER
BUCK _____	____	____	____
DOE _____			

WEIGHT_____ ANTLERLESS DEER TAG NUMBER _____
POINTS_____

GAME WOUNDED NOT FOUND:
TYPE: _____ NUMBER: _____

NAME: _____ _____
RANK: _____ _____
UNIT: _____ _____
TELEPHONE NO. _____ _____
MCAS PERMIT:_____ _____

Signature:_____ Signature:_____ Signature_____

APPENDIX G

PREREQUISTITES FOR ASSIGMENT AND SPECIAL ORDERS FOR HUNT MASTERS (MCAS)

1. PREREQUISITES FOR ASSIGNMENT AS HUNT MASTERS

a. Hunt Masters and Assistant Hunt Masters must be on active duty, be retired members of the U.S. Armed Forces, or be a qualified civilian employee selected on the basis of maturity and integrity.

b. Hunt Masters and Assistant Hunt Masters must show that they possess a thorough knowledge of the physical terrain of each area to be hunted and are fully familiar with, and understand the current rules and regulations established by the South Carolina Department of Natural Resources.

c. MCAS Sportsman's Club Hunt Masters will be designated in writing to Chief Game Warden by the Club President annually, prior to the start of hunting season. Non-Sportsman Club Hunt Masters will be designated by the Chief Game Warden.

2. SPECIAL ORDERS FOR HUNT MASTERS AND ASSISTANT HUNT MASTERS

a. The Hunt Master will be the direct representative of the Commanding Officer on all organized hunts conducted aboard this Air Station, regardless of the Hunt Master's grade or the grade of other participating hunters. Officers and SNCO's will be shown due courtesy commensurate with their grade.

b. The Hunt Master will be responsible for the organization, proper conduct and safety of the hunt, and assume the duties which include, but are not limited to, the following:

(1) Ensure that all participants of the hunt are eligible to hunt and possess all appropriate licenses/permits as required by the South Carolina Wildlife and Marine Resources Commission Hunting and Fishing Regulations and this Order. Restrict the number of hunt participants as dictated by prudence and safety.

(2) Prior to the start of the day's hunt, report in person to the Duty Game Warden/PMO Desk Sergeant. Provide the PMO Desk Sergeant/Duty Game Warden with a complete legible roster of participants, to include: name, grade, social security number and Air Station Hunting Permit number for each hunter. Upon submission of the above, the PMO Desk Sergeant will issue the Hunt Master a radio and grant final area clearance for the hunt.

(3) Prior to commencement of the actual hunt, the Hunt Master will personally ensure that the safety signs required by this Order have been appropriately placed.

(4) The Hunt Master will ensure that, when placing hunters on stands/firing positions, an individual field of fire is assigned.

(5) Hunt Masters will ensure that all antlerless deer harvested are properly tagged, that one half of all deer jawbones are saved and that their weight and sex are recorded. This information will be furnished to the Chief Game Warden within three (3) working days after the hunt.

(6) Upon completion of the hunt in an area, the Hunt Master will notify PMO, via radio, that the hunt has been secured. This will enable the Desk Sergeant to open the area for individual hunters.

(7) Hunt Masters will ensure that the Duty Game Warden/PMO is advised as soon as possible of the termination of the hunt and certify the accountability of all hunters.

(8) Hunt Masters are authorized and directed to suspend the hunting privileges of any hunter participating in that hunt, for any violations of the rules and regulations contained in the South Carolina Hunting and Fishing Regulations or this Order. All violations will be reported to the Chief Game Warden for preparation of an Incident/Complaint Report for referral to the Air Station Commanding Officer.

(9) Hunt Masters and all participating hunters will be watchful for persons engaged in illegal or dangerous acts. Violators, military or civilian, shall be reasonably detained and a Game Warden summoned to the scene. If reasonable detention is not feasible, identifying information will be provided to the Chief Game Warden.

c. Assistant Hunt Masters. The Hunt Master may delegate to an Assistant Hunt Master any reasonable authority to ensure the organization, conduct and security of the hunt.

APPENDIX H

TEN COMMANDMENTS OF HUNTING SAFETY

(MCAS)

1. Treat every gun as if it were loaded.

2. Watch that muzzle, carry your gun safely; keep the safety on until ready to shoot.

3. Unload gun when not in use; break down or have chamber open; guns should be carried in cases to the shooting areas.

4. Be sure barrel is clear of obstructions and that you have only ammunition of the proper size for the gun you carry.

5. Be sure of the target before you pull the trigger; know identifying features of the game you hunt.

6. Never point a gun at anything you do not intend to shoot.

7. Never climb a tree or fence or jump a ditch with a loaded gun; never pull a gun toward you by the muzzle.

8. Never shoot at a flat, hard surface or water; and always be sure your backstop is adequate.

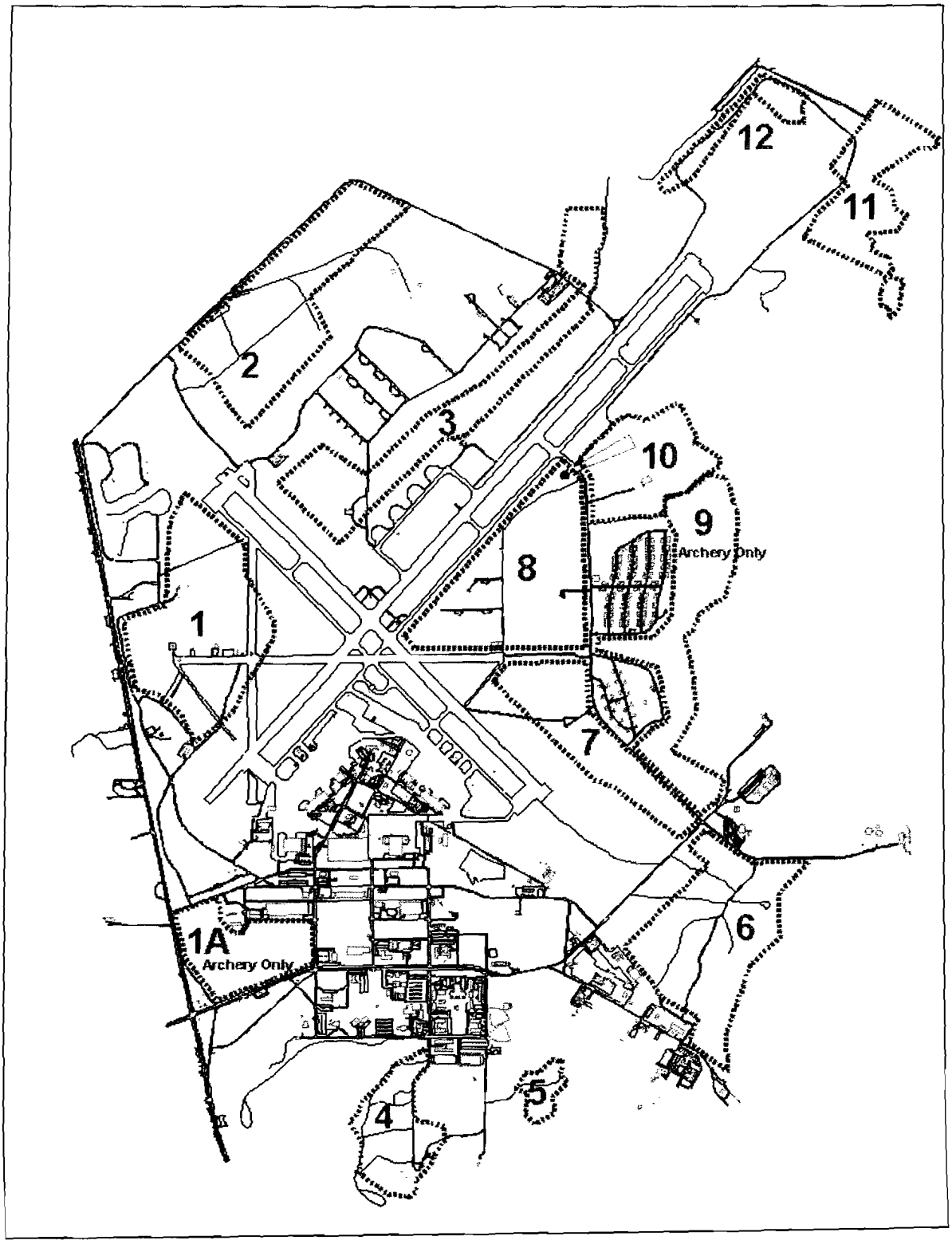
9. Store guns and ammunition separately; well beyond the reach of children.

10. Abstain from the use of alcoholic beverages before and during shooting.

KEEP SHOOTING A SAFE SPORT

APPENDIX I

MCAS BEAUFORT HUNTING MAP



APPENDIX J

TOWNSEND BOMBING RANG (TBR) HUNTING
APPLICATION/HOLD HARMLESS AGREEMENT

Townsend Bombing Range Hunting Application		
Applicant Information		
Name:		
Date of Birth:	Daytime Phone:	Home Phone:
Current Address:		
City:	State:	ZIP:
Hunters Safety Course (circle one)	Yes	No
Guest Information		
Name:		
Date of Birth:	Related?	(if so state relation):
Daytime Phone:	Home Phone:	
City:	State:	ZIP:
Hunters Safety Course (circle one)	Yes	No
Emergency Contact Information		
Name:		
Address:		
City:	State:	ZIP: Phone:
Relationship:		
Vehicle Information		
Make/Model		
License Plate #	Insurance Policy#:	Color:
Emergency Contact Information (Guest)		
Name:		
Address:		Phone:
City:	State:	Zip:
Relationship:		
Hunt Preferences (circle one or all)		
1: Archery (date's)	3: Rifle (date's)	
2: Black Powder (date's)	4: Rifle (date's)	
Prioritize: (example 3,4,2,1,)		
Mobility Impaired		
Wheelchair:	Other:	

Georgia Hunting License Number:_____ ; Do you have any GADNR hunting violations? Yes__ No__

Privacy Act Statement	The purpose of this information is intended to determine the status of personnel at the time of their application for permission to hunt at Townsend Bombing Range, GA. It will be used to maintain accountability of all persons authorized to hunt at Townsend Bombing Range, GA. Disclosure is voluntary; however, you may be denied authority to hunt at Townsend Bombing Range, GA if the requested information is not provided. I certify the information provided on this form is current. I also certify that I have read and understand the Townsend Bombing Range Hunting regulations
Date:	Signature of Applicant:

HOLD HARMLESS AGREEMENT

(RELEASE OF CLAIMS & WAIVER OF LIABILITY)

I am about to participate in activities associated with hunting to be held in military training areas at Townsend Bombing Range, Georgia.

SITE SPECIFIC DANGERS: I understand that the designated hunting area to which I will be assigned is located within an active military training complex which includes training areas and a live fire range. I understand the following cautions with regard to this range and training areas. First, the range and training areas have been designed for and used by the armed forces for training its personnel in the deadly art of individual and unit combat. Second, this entire range and all training areas, to include my assigned hunting area, have been subject to countless live fire exercises and may well contain a variety of unexploded ordnance which, if triggered by or during my presence, could result in serious bodily injury or death to me (NOTE: STAY WELL CLEAR OF ANY AND ALL VISIBLE ORDNANCES). Third, this active weapons range has designated but unmarked safety zones known as Surface Danger Zones (SDZ) within which the projectiles from a given weapons system should be contained. While the specific hunting area to which I am assigned on a given hunting day will not be within an active SDZ, I understand that it may be immediately adjacent to an active SDZ. I understand that if I leave my assigned hunting area by other than an authorized route, I may enter an active SDZ and expose myself to serious bodily injury or death. Finally, this range and training areas contain manmade and natural obstacles, some of which may be hidden, which could cause me to stumble, fall, and otherwise suffer serious bodily injury or death.

HUNTING DANGERS: I understand the following are hazards inherent in the activity of hunting: hunters are equipped with weapons to include firearms and archery equipment that fire projectiles designed to cause death; hunting exposes me to the hazards of these projectiles through my own actions and the actions of other hunters in handling the weapons, identifying game, and making decisions when and where to shoot; the climbing of trees, use of tree stands and associated climbing devices exposes me to serious bodily injury or death from falling; accessing hunting areas and retrieval of game is a rigorous outdoor activity which may expose me to hazards to include, but not limited to weather extremes, physical exertion, catastrophic illness, hypothermia, drowning, falling debris from trees, toxins from plants and animals, disease transmitted by ticks and rabid animals.

In consideration of the privilege to participate in hunting, I, the undersigned, intending to be legally bound, waive and release for myself, my heirs, executors, administrators and assigns, all liability for damages or injury that I may incur from participation in hunting and any and all rights, claims, demands and other actions which would otherwise have as a result of my participation in hunting. This waiver of liability and release of claims extends to the I following entities, their agents, employees, staff, representatives, successors, assigns and individuals, including such individuals when acting in either their official or personal capacities: the United States Government, the Department of Defense and of the Navy, the United States Marine Corps, the State of Georgia, the County of McIntosh, Georgia, the State of South Carolina, the United States Air Force, the Georgia Air National Guard, and any other agency or personnel associated

hunting at Townsend Bombing Range, Georgia. This release and waiver extends to any and all property damage, bodily injury or death I may suffer as a hunting participant due to the actions or decisions of such entities and individuals, whether made in good faith or through negligence. This waiver does not extend to intentional misconduct or actions taken with reckless disregard for human life and safety.

I understand that by signing this Agreement, I have abandoned any rights I may have, or any rights anyone associated with me may have, through legal or friendship or family ties, to sue the federal government for any injury I may sustain because of my participation in hunting that results in any damage whatsoever to my property, my person or in my death. By signing this document, I acknowledge that the federal government, or any agency or employee thereof, is not liable for any injury I may sustain, to include death, as a result of my participation in hunting. This document shall remain in effect and be held until the Range Operations Officer, Townsend Bombing Range, Georgia receives written notice of cancellation.

_____ _____
Initials Date

I ACKNOWLEDGE THAT I HAVE READ THIS AGREEMENT, THAT I AM FULLY AWARE OF THE RISKS INVOLVED IN THIS EVENT, AND THAT I VOLUNTARILY ACCEPT AND ASSUME THE RISKS ASSOCIATED WITH PARTICIPATION IN THIS EVENT.

I understand that should I decline to execute this release of claim and waiver of liability, I will not be permitted to participate in hunting at Townsend Bombing Range, Georgia.

PARTICIPANT PRINTED NAME	PARTICIPANT SIGNATURE	DATE
GUEST PRINTED NAME	GUEST SIGNATURE	DATE
WITNESS PRINTED NAME	WITNESS SIGNATURE	DATE

If the guest is under 18 years of age:

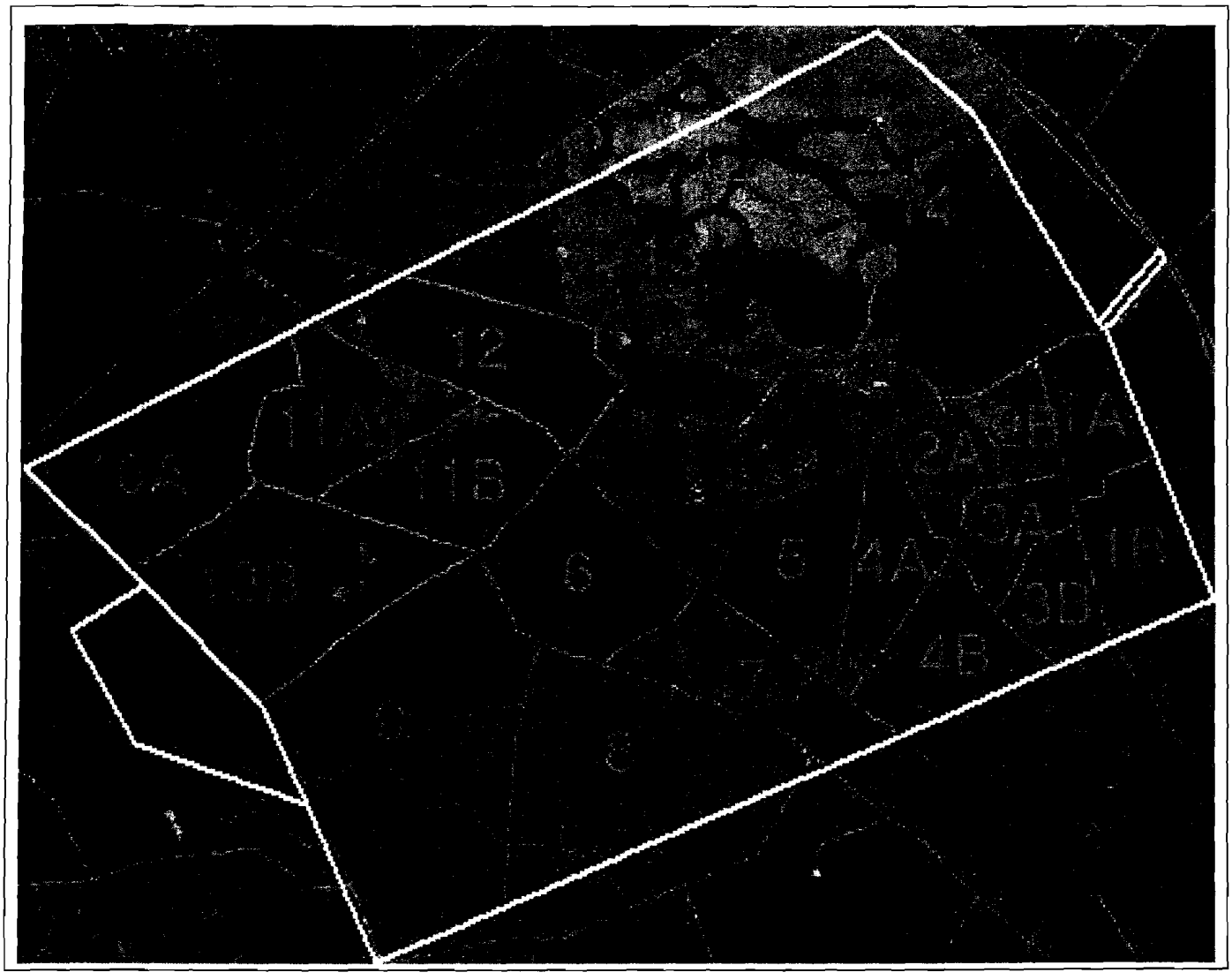
_____
SIGNATURE OF PARENT/GUARDIAN

on behalf of

PRINTED NAME OF MINOR	DATE

APPENDIX K

TBR HUNTING MAP



HUNTERS SAFETY BRIEF (TBR)

APPENDIX L

Townsend Range Hunters Safety Briefing

1. All hunters must read and completely understand everything stated in this document. Sign and return to range Hunt Manager prior to hunt.

2. Purpose: To establish a safe hunt program and to make aware all personnel involved the hazards associated with this program.

3. Hazards to Hunters: This is a military training range where weapons are used to train our military fighting forces. The following will list some of the hazards associated with this installation.

a. Spent ordinance will not be handled by anyone at anytime. Just because it has been used does not mean it is safe. Avoid all spent ordinance at all times. It does not have to be marked or identified by anyone associated with the hunt.

b. Be careful of all holes in the ground and stay clear as they could possibly cave in. Walk way around any thing that looks suspicious and be aware of your surroundings and footings at all times.

c. Inspect any tree thoroughly before climbing look for any damage that may have been caused by ordinance or any knots in trees that could cause the tree to break while climbing.

d. Be aware of where you are. The Range boundary lines are properly marked with signs. We have hunting clubs for neighbors and they could possibly be hunting the property lines. Do not leave the property if you trail a wounded deer to the property line. Mark the spot and notify Range Control immediately. We will notify the appropriate people and help to retrieve your deer.

e. Do not wander into areas that you are not assigned. You may not know where other hunters are and there are areas you do not need to be in for your safety.

f. Be aware that we have venomous snakes. Protect yourself against tick bites and the possibility of getting Lime Disease.

g. Know your equipment. Inspect it thoroughly and always use a Climbing Safety Harness.

h. Make sure your weapon is in good working order and never use non-approved ammo for your weapon.

i. Know your target, and what's behind your target.

j. If you wound or kill an animal and cannot retrieve it on your own, contact Range Control and we will assist you to make every effort to retrieve

the animal. Leaving a dead animal on the range will cause buzzard activity, which can cause severe damage to the aircraft that trains here.

k. Make all check-in times. If you are looking for a wounded animal mark the spot and notify Range Control. After everyone has checked in we will be glad to assist you in retrieving your animal. If you do not check-in for any reason we will assume that something went wrong and immediately start searching for you. Remember that the check-in is for your safety.

4. Souvenirs: Under no circumstance can you take a souvenir from the range! We hope that taking a good hunting memory and possibly a trophy is the greatest souvenir. Good hunting and good luck.

Print name: _____

Sign name: _____

APPENDIX M

LOST HUNTER RECOVERY PLAN

LOST HUNTER RECOEVER PLAN TOWNSEND RANGE

1. SCOPE. This Range Operating Instruction (ROI) establishes procedures for ensuring that all hunters are accounted for after a hunt and to ensure that the range is safe to resume flying operations. These procedures shall become effective immediately and shall remain effective until this letter is rescinded or updated.

2. PURPOSE. The purpose of this directive is to assign responsibilities in case someone has not returned safely.

3. RESPONSIBILITIES

a. Volunteer personnel working at TBR during a hunt day are responsible for ensuring that all hunters and personnel have checked in at Range Control prior to closing up for the days hunting activity.

b. In the event of someone not checking in at the designated time the Senior most TBR personnel will be designated as "in charge" and will determine the appropriate actions that will follow.

4. ACTIONS FOR LOST HUNTER RECOVERY

a. Determine who is not accounted for and the designated areas that they were assigned.

b. Instruct all personnel managing the hunt not leave until released and ask for hunters to volunteer to stay in case needed.

c. Send a TBR person to the designated area with communications to locate and determine the status of the hunter's vehicle and post that person there. If the hunter's vehicle is missing or cannot be located call the contact phone numbers provided by the hunter. The person posted should try to make contact by audible means such as blowing a horn, whistle orby calling out there name.

d. Determine if a search party is required and assemble party at Range Control to ensure that people are paired up with knowledgeable people of the area and issue communications.

e. The person "in charge" will direct search party to appropriate areas to conduct a methodical ground search in case the missing person is injured and cannot communicate by any means.

f. The person "in charge" will notify the following authorities for further instruction:

Range Commander: Col Stuart Strickland
Cell: 912-327-2888
Cell: 912-247-1703

Range NCOIC: MSgt Brian Leverette
Cell: 912-399-3424
Cell: 912-210-9298

MCAS Beaufort Game Warden: Gary Herndon
Cell: 843-321-6453
Cell: 843-866-3369
GA DNR: 1-800-241-4113

5. DEFINITIONS

a. TBR - Townsend Bombing Range.

b. RCO - Range Control Officer/Range Commander

c. GADNR- Georgia Department of Natural Resources

d. NCOIC- Non Commissioned Officer In Charge

APPENDIX N

TBR HUNTING ROSTER

HUNTER ROSTER

TOWNSEND BOMBING RANGE

DATE:_____

NAME	AREA NO.	SIGN IN MILITARY TIME	SIGN OUT MILITARY TIME	REMARKS

APPENDIX O

TBR DEER HARVEST RECORD

DEER HARVEST RECORD

TOWNSEND BOMBING RANGE

2007-2008 SEASON

DEER #	DATE KILLED	WEAPON	SEX (M-F)	LIVE WT.	# PTS. 1" +	OUTSIDE SPREAD	AGE	LACTATION YES/NO	HUNTER NAME

APPENDIX P

CERTIFICATE OF UNDERSTANDING

Date _____

1. I have read, understand and will comply with ASO 1700.2D, as it applies to Chapter 7 HUNTING, TOWNSEND BOMBING RANGE, GEORGIA. I further understand that any violation thereof subjects me to possible disciplinary, civil and/or administrative action as appropriate, and may prohibit me from hunting on Townsend Bombing Range, Georgia in the future.

_____
SIGNATURE

_____
PRINT NAME

_____
ADDRESS

_____
WITNESS

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