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UNITED STATES MARINE CORPS
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA 28542

IN REPLY REFER TO
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NREAD

From: Commanding General, Marine Corps Base, Camp Lejeune
To: Commandant of the Marine Corps (Code LFL)

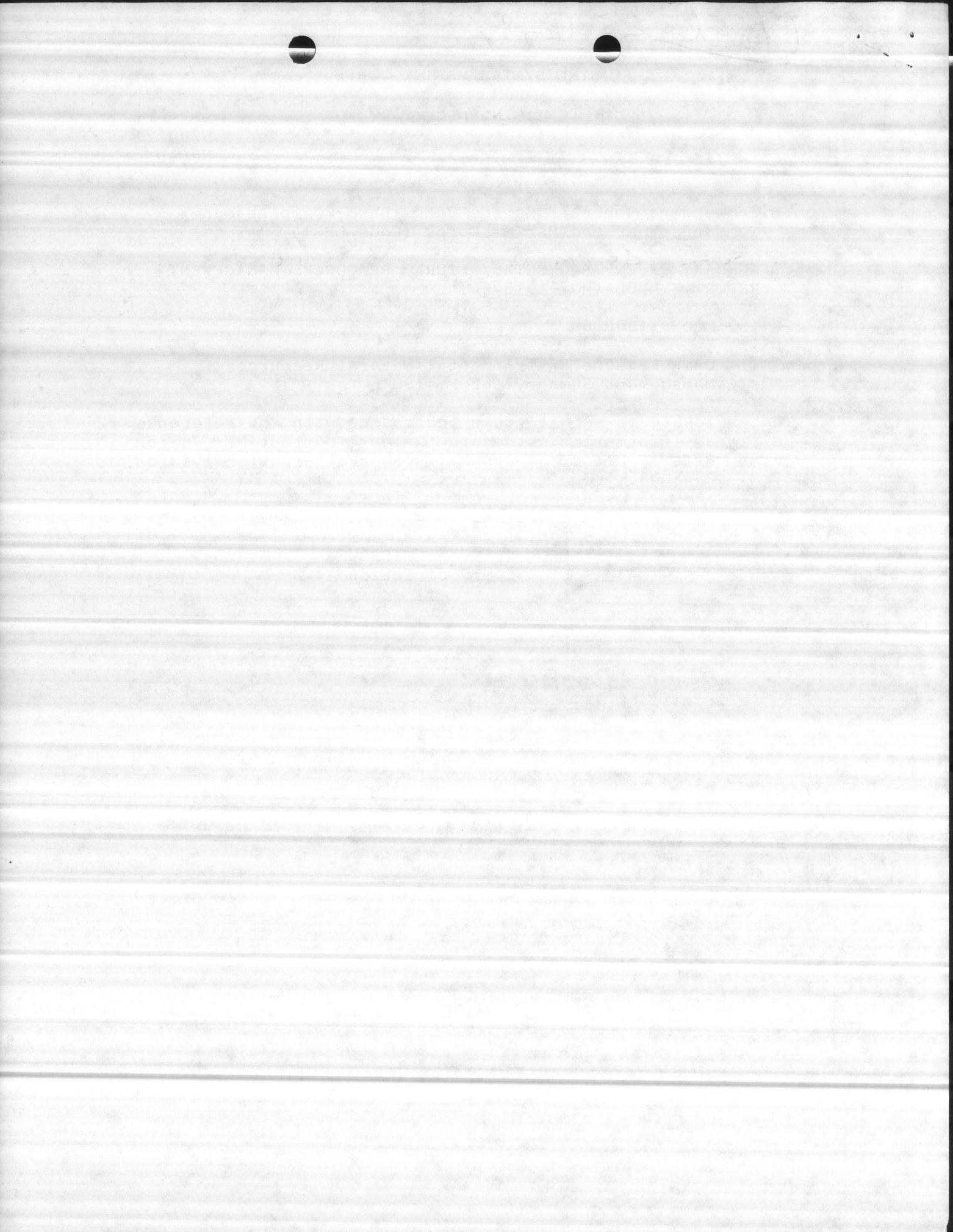
Subj: SUMMARY OF ENVIRONMENTAL/NATURAL RESOURCES MANAGEMENT
REPORT SYMBOL (MC-11015-06)

Ref: (a) MCO P11000.8B

Encl: (1) Camp Lejeune Environmental/Natural Resources
Management Summary for FY-1984

1. The enclosure is submitted in accordance with the reference. If additional information is desired, please contact Mr. Julian I. Wooten, Natural Resources and Environmental Affairs Division, (AUTOVON) 484-5003.

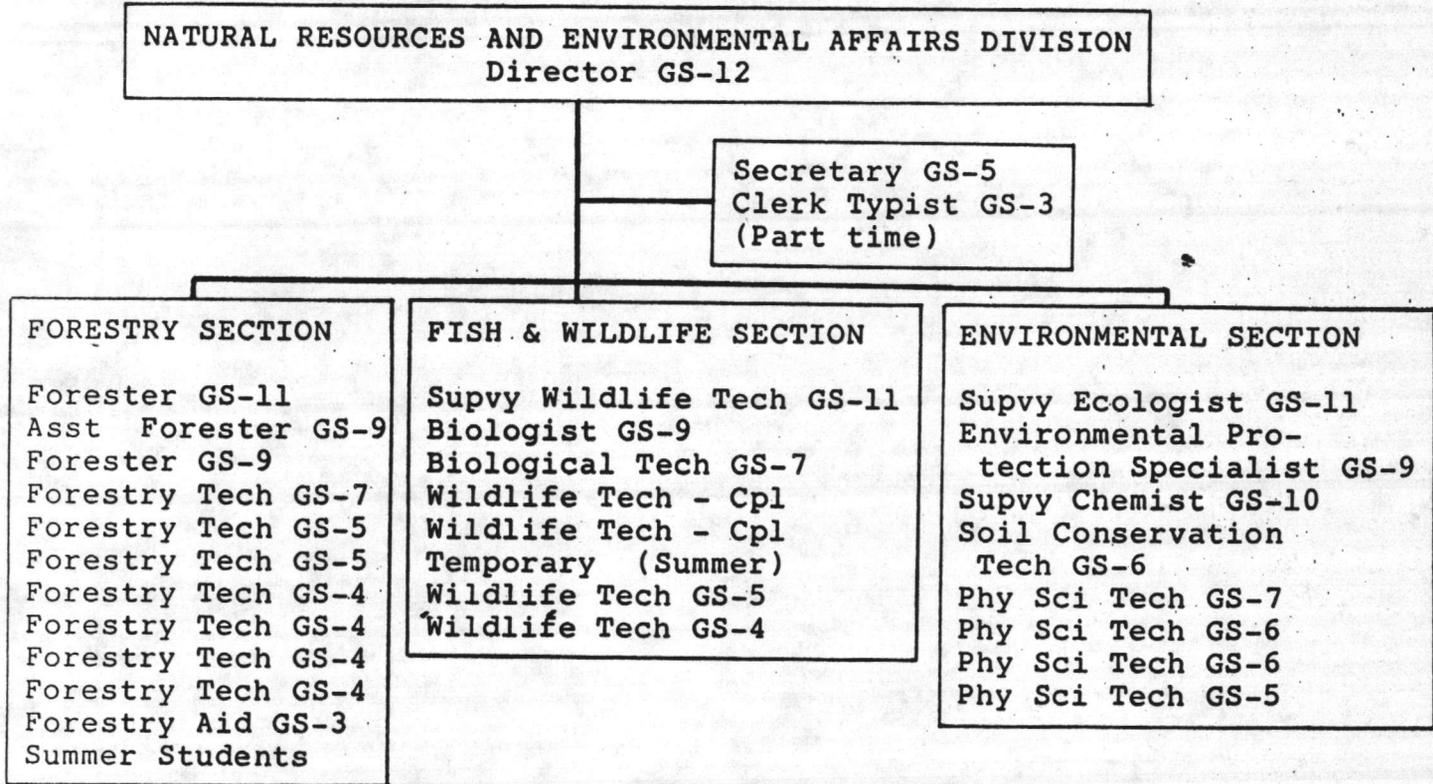
R. A. TIEBOUT
By direction



CAMP LEJEUNE ENVIRONMENTAL/NATURAL RESOURCES
MANAGEMENT SUMMARY FOR FY-1984

GENERAL MANAGEMENT

1. Program Administration - The Assistant Chief of Staff, Facilities has overall base natural resources and environmental program management responsibilities. The following personnel perform forestry, fish and wildlife and environmental program requirements.



2. Education and Public Relations

a. Training, Conferences, Meetings, Workshops

- Nov 1984 Director, Natural Resources and Environmental Affairs Division (NREAD), Ecologist, Forester and Supvy Wildlife Technician attended LUMS training at the University of Nevada at Las Vegas.
- Nov 1984 Director, NREAD and Supvy Wildlife Technician attended the DOD/Southeastern Fish and Wildlife Conference in New Orleans, Louisiana.
- Nov 1984 Supvy Wildlife Technician attended the Sea Turtle Workshop in New Bern, North Carolina.

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Dec 1984 Physical Science Technician attended North Carolina's Division of Health Services, Bacteriological Methods in the Analysis of Drinking Water course in Raleigh, North Carolina.

Jan 1985 Supvy Chemist attended the Hazardous Waste Manager's Seminar given by NEESA at Marine Corps Air Station, Beaufort, South Carolina.

Feb 1985 Director, NREAD and Supvy Wildlife Technician attended the Southeastern White-Tailed Deer Study Group Meeting in Wilmington, North Carolina.

Feb 1985 Asst Base Forester and Chief Forestry Technician attended the North Carolina Forest Service's Cooperators School relative to forest fire suppression.

Mar 1985 Base Forester attended an Environmental Coordinator's Workshop at the Army Logistics Management Center, Fort Lee, Virginia.

Mar 1985 Marine Corps Base hosted the Navy Land Use Compatibility Seminar which was attended by Department of Defense personnel engaged in land use management at various levels throughout the nation. Director, NREAD gave a presentation on Red-Cockaded Woodpecker management at Camp Lejeune.

Mar 1985 All forestry personnel and several representatives of Base Maintenance Division's Heavy Equipment Section and the Base Fire Department were briefed by North Carolina Forest Service on forest fire fatalities and how they could have been avoided.

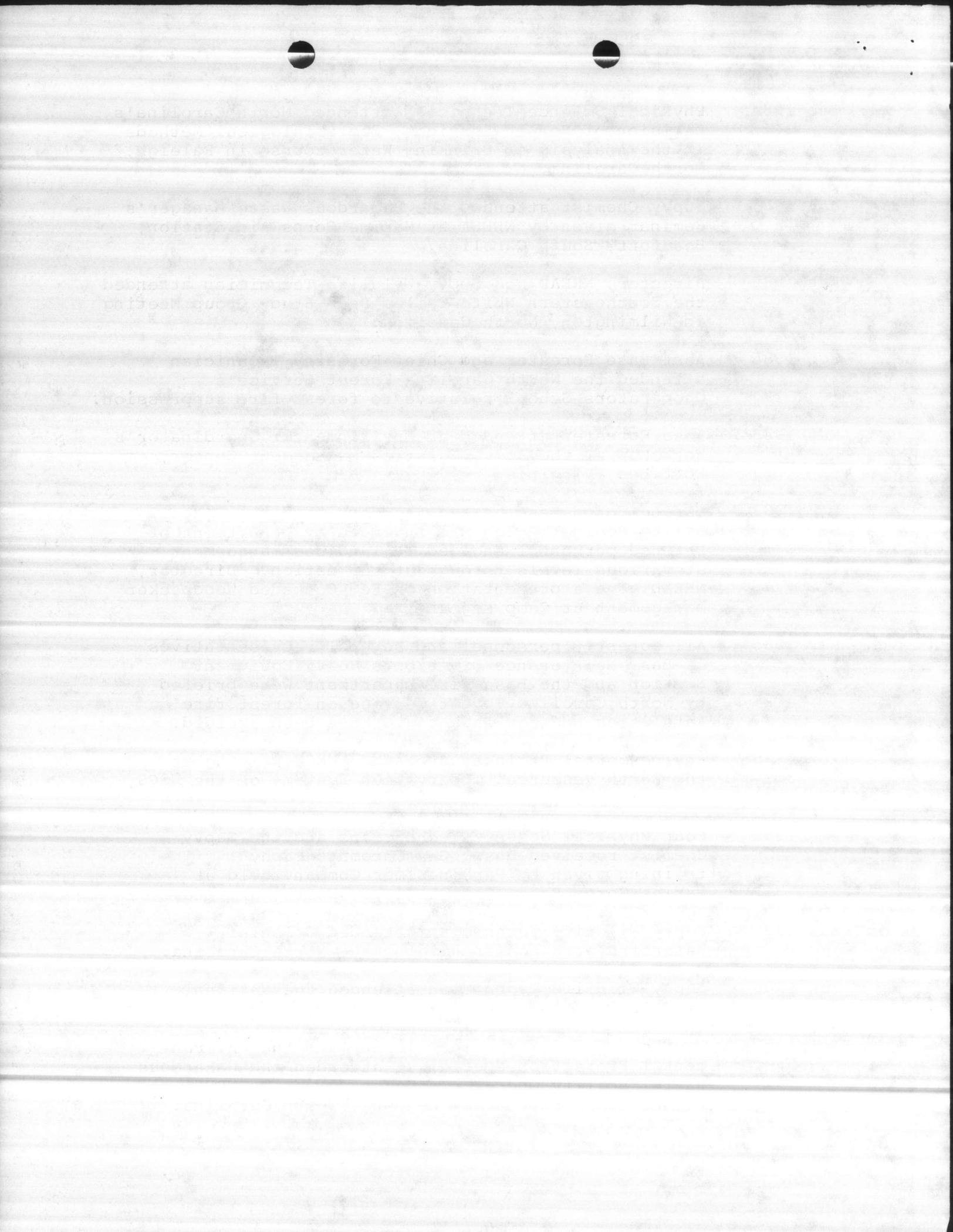
Apr 1985 Environmental Engineer attended LUMS training at the Earth Resources Observation Systems of the USGS, Sioux Falls, South Dakota.

Apr 1985 Four Physical Science Technicians and the Supvy Chemist received Basic Gas Chromatography training given by Perkin-Elmer Company held at Marine Corps Base, Camp Lejeune, North Carolina.

May 1985 Supvy Wildlife Technician attended Colonial Waterbird Workshop in Wilmington, North Carolina.

Jun 1985 Supvy Wildlife Technician attended the National Wild Turkey Symposium in Des Moines, Iowa.

Jul-Aug 1985 Two Physical Science Technicians and the Environmental Protection Specialist attended the Hazardous Waste Facility Operator's Course given by NEESA at Marine Corps Base, Camp Lejeune, North Carolina.



- Jul-Aug 1985 Director, NREAD and Asst Base Forester attended the Society of American Foresters Convention in Fort Collins, Colorado. They also attended and presented programs at the Navy Forestry Conference and the DOD Forestry Conference held in conjunction with the Society of American Foresters Convention.
- Sep 1985 Three Physical Science Technicians, Soil Conservation Technician, Environmental Protection Specialist and Supvy Chemist attended the Respiratory Protection Training given by Preventive Medicine Unit, Naval Hospital at Camp Lejeune, North Carolina.

b. Training Given

- Jan 1985 Director, NREAD, Forester, Environmental Protection Specialist and Supvy Chemist gave a class on Natural Resources to Onslow County School Teachers as part of a State Teachers Recertification Program.
- Mar 1985 Supvy Chemist gave a class on water pollution to 25 Berkeley Manor Junior High Students.
- Apr 1985 Asst Forester presented a slide presentation to approximately 30 students of the Lejeune High School Ecology Class.
- Jul 1985 Hazardous material disposal and related pollution abatement training is routinely being provided to civilian and military personnel. Approximately 60 key personnel received formal training in July provided by a NEESA contractor. Base environmental personnel are routinely providing training as requested by individual organizations. Training is focused towards key supervisors, foreman and NCO's. Hazardous Material Disposal Coordinators appointed in each command are assisting with this training.
- Sep 1985 Director, NREAD gave a slide presentation to approximately 50 Stone Street Elementary School students at Camp Lejeune, North Carolina.

c. Tours

- Mar 1985 Supvy Wildlife Technician conducted a field trip for 18 forestry and wildlife students from North Carolina State University, Raleigh, North Carolina.
- Apr 1985 Supvy Chemist conducted a tour of the Water Quality Control Laboratory to a Lejeune High School Ecology Class.



3. Special Incidents

a. NREAD and Preventive Medicine personnel coordinated a research study with the Department of Entomology, North Carolina State University, Raleigh, North Carolina. The research involved the study of the tick population relative to investigation into tick transmitted Lyme Disease and the impact of controlled winter burning on the tick populations.

b. NREAD personnel coordinated a Savanna Research Study with the North Carolina Division of Coastal Management. Purpose of the research is to analyze trees, shrubs, herbs and soils within four selected study areas. The research continued along the staggered blooming times of savanna flowers until early October 1985. A report is forthcoming.

c. During the Spring 1985, in cooperation with the North Carolina Wildlife Resources Commission, 40 wild turkeys were live-trapped at Camp Lejeune and relocated to three unoccupied habitat areas in Eastern North Carolina. The trapping operation and release of the turkeys were video taped by base personnel.

d. In April 1985, part of a prehistoric Gomphothere Tooth was found on Onslow Beach. The tooth was forwarded to the Smithsonian Institution, Washington, DC and is cataloged in the Department of Paleobiology under number 374281.

e. A longleaf pine natural area and a Wallace Creek wetlands area were entered in the State Natural Heritage Program on 18 July 1985.

f. Headquarters Marine Corps funded Red-Cockaded Woodpecker Research Project began 6 Sep 1985 by North Carolina State University, Raleigh, North Carolina, as arranged by LANTDIV through the Department of the Interior.



ENVIRONMENTAL MANAGEMENT

1. Air Quality

a. Repairs to the air pollution controls at the main steam plant were designed and stack testing for permit renewal were scheduled.

b. A FY-88 pollution abatement project for the main steam plant was submitted for fly ash handling and recycling facilities.

2. Water Management

a. Ten drinking water wells were found containing Volatile Organic Chemicals (VOCs). Eight of the ten are in the Hadnot Point Water Treatment System and their major contaminant is Trichloroethylene. The other two wells are in the Tarawa Terrace Water Treatment System and their major contaminant is Tetrachloroethylene.

(1) All ten contaminated wells were shut off.

(2) Base history did not show any potential source of the Tarawa Terrace contamination. The North Carolina Division of Environmental Management is studying possible off-base sources.

(3) Routine monitoring of the Hadnot Point and Tarawa Terrace treated water for VOCs has been initiated.

(4) All drinking water wells were tested for VOCs.

b. Marine Corps Air Station, New River Water Treatment Systems' Trihalomethane (THM) content, exceeded acceptable levels, which was found to be directly related to the chlorides in the raw water wells. On 17 July 1985, all wells at Marine Corps Air Station, New River ^{with} chloride concentrations in excess 100 mg/l were turned off. Subsequent THM monitoring on 24 July produced a level of 67.6 ppb (parts per billion) which was less than half of what it was on 17 July. The high chloride wells remain off at Marine Corps Air Station, New River.

c. The scope of work for the Navy Assessment and Control of Installation Pollutants (NACIP) study was defined in cooperation with LANTDIV. The scope includes the confirmation study for 22 sites, the characterization of groundwater contamination affecting two water supply systems and the Feasibility Report of remedial options for all sites and water supply issues.

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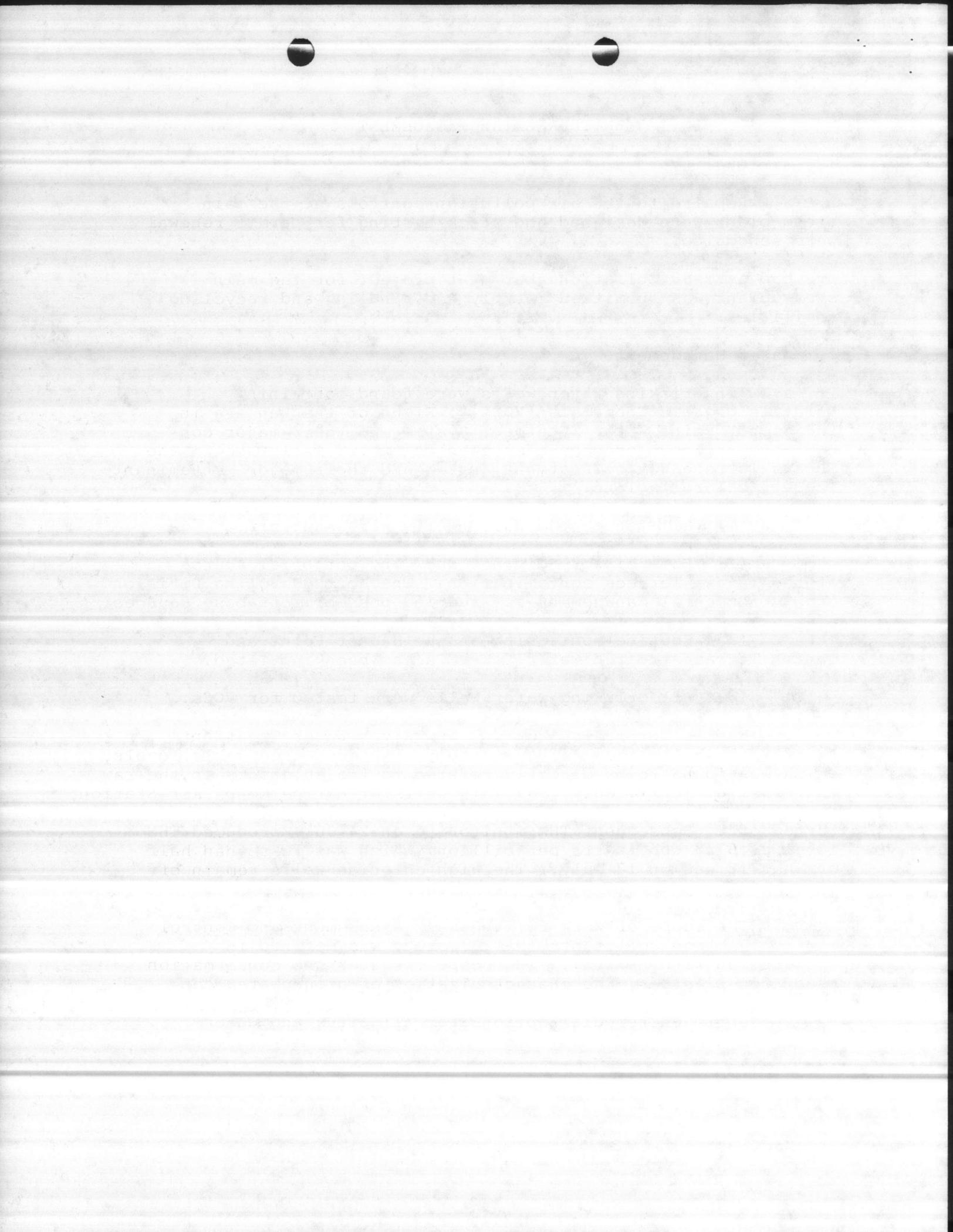
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d. Construction project to expand the Holcomb Boulevard Water Treatment Plant began. One of the first phases which ran a water line from Holcomb Boulevard's raw water line to the Tarawa Terrace raw water line was completed in June 1985. This was done first to relieve a water shortage at Tarawa Terrace as a result of its two contaminated wells being shut down.

e. The Water Quality Control Laboratory, NREAD, provided support to the Resident Officer in Charge of Construction by running 850 coliform tests of water coming through the new water laterals installed in the Midway Park Housing Area.

f. With the closure of the Base Ice Plant, the base has been buying ice machines for the various units that need ice. Preventive Medicine Unit (PMU) started monitoring all ice machines aboard Camp Lejeune. The Water Quality Control Laboratory, NREAD, provided analysis support for the 892 ice samples PMU took in FY-1985.

g. The Water Quality Control Laboratory, NREAD, performed the following analysis during FY-85:

Coliform Tests of Potable Water and Swimming Pools combined:	2400	(approximately)
Coliform Tests of Sewage Effluent:	2800	"
Coliform Tests of Surface Water:	1900	"
Biochemical Oxygen Demand; 5-Day:	3200	"
Suspended Solids of Outfalls:	2500	"
Oil and Grease:	270	"

h. A Gas Chromatograph located in the Quality Control Laboratory, NREAD, became operational and will allow local testing of drinking water for contaminants on a limited basis.

i. Application was submitted to the State of North Carolina for renewal of the NPDES permit for seven wastewater plants and related sources.

j. A Coastal Management Study of Onslow Beach was initiated in cooperation with the Sea Grant College Program of North Carolina State University. The study will evaluate impacts on the barrier island due to natural and man-induced factors.

k. Stormwater Management Study of the rapidly urbanizing Cogdell's Creek watershed was initiated with assistance from LANTDIV. Flood plain protection, erosion control and stormwater runoff controls will be identified for inclusion in the 20-plus MILCON projects planned for the future.



1. The availability of groundwater supplied to support future development was determined to be a key issue during FY-85. Camp Lejeune requested CMC funding for a four-year Aquifer Study by the U. S. Geological Survey.

m. A FY-88 MILCON Pollution Abatement Project was submitted to control vehicle washing and eliminate untreated discharge from self-propelled artillery maintenance facility.

3. Noise Control. Managing or controlling noise associated with gunfire, rockets, explosives, etc. is a continuing consideration during training. A locally developed system referred to as "Blast Forecast" was developed to eliminate and reduce disturbance of excess shock waves and noise from these weapons and explosives. The forecast is computed by Marine Corps Air Station, New River, based on local weather, existing and predicted. The method predicts the atmosphere refraction conditions and explosive limit (in pounds) which should not exceed the annoyance level of the surrounding community. The information is provided to Base Range Control for use in advising air/ground units of the maximum size projectiles or bombs (or combination thereof) allowable for that period. Use of this system, while not perfect, is a positive effort to reduce an adverse impact of military training on the community.

4. Hazardous Material Management

a. Approximately 44 samples of unknown substances were taken during FY-85 for analysis under the Waste Analysis Plan per RCRA, Part B permit.

b. Approximately 104 transformers were sampled and analyzed for Polychlorinated Biphenyls (PCB) content.

c. Approximately 34 samples of used oil were taken during FY-85. Twenty-one of these samples were taken within the different generation sites to determine quality and variability of used oil.

d. A \$160K contract was awarded to Environmental Safety and Designs, Incorporated for a basewide Hazardous Materials/Used Oil Study. The study will develop the justification for upgraded hazardous material storage facilities. The study will include hazardous material spill prevention, control and countermeasure (SPCC) plan, used oil handling and recovery options (to include energy recovery) and the Oil SPCC Plan. An automated hazardous material information system will produce the hazardous material inventory for all items aboard Camp Lejeune which will significantly improve the potential for waste minimization and recovery.



5. Resource Recovery and Recycling

a. Waste oil collection and sales through the Defense Reutilization and Marketing Office (DRMO) continues.

b. The on base recycling center for cardboard operated by the Onslow County Sheltered Workshop Program was closed. Cardboard is currently being transported to their Jacksonville, North Carolina recycling center.

6. Solid Waste Disposal

a. Landfill continues operation in compliance with state permits.

b. Landfill is being inspected quarterly by North Carolina Division of Health Services. All reports are satisfactory to date.

c. Family housing garbage/refuse pick up is being done by private contractor.

7. Environmental Documentation. Environmental impacts were reviewed for approximately 25 construction projects, including MILCON projects, and for military training exercises such as Solid Shield-85, which proposed transfer of fuel ship-to-shore. Other actions reviewed included repairs to Camp Lejeune Railroad, clearing of artillery impact areas, exercise bold strike and numerous range improvement projects.



NATURAL RESOURCES MANAGEMENT

1. Fish and Game Management.

a. Work activities were directed for planning, administering and coordinating the conservation of wildlife populations through the development, maintenance and management of natural habitat. Habitat development projects included the maintenance and development of 500 acres of clearings which are well dispersed throughout the base; maintenance of a quail management area; establishment of autumn olive and bicolor lespedeza seedlings for game species; the maintenance of waterfowl impoundments for migratory game birds and maintenance/management of 11 freshwater ponds per recreational fishing.

b. Biological sampling of the base deer herd was conducted through reproductive study, age/sex ratio analysis and annual parasite counts.

c. The base is participating in a cooperative study with the North Carolina Wildlife Resources Commission and the National Wild Turkey Federation Commission to determine techniques for studying the genetic variability of wild turkey populations.

d. Permit Sales by Type

<u>Type</u>	<u>Fee</u>	<u>No</u>	<u>Funds Collected</u>
Hunting/Fishing Military	\$ 7.00	1,730	\$12,110
Hunting/Fishing Civ Employee	7.00	173	1,211
Hunting/Fishing Civ Guest Seasonal	7.00	401	2,807
Hunting/Fishing Civ Guest Daily	3.00	6	18
Fishing Military Civ Employee	3.00	746	2,238
Hunting Dependent Minor	No Charge		
Trapping Military Civ Employee	10.00	26	260
		<u>3,082</u>	<u>\$18,644</u>

e. Game Harvested by Species

<u>Type</u>	<u>Numbers</u>
Deer	765 (52 additional kills by motor vehicle)
Bear	2
Squirrel	150
Wild Turkey	17
Quail	22
Dove	26
Rabbit	4
Duck	2
Raccoon	73
Opposum	6

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2. Nongame/Protected Species Management

a. Formal consultation has been conducted on all threatened and endangered species relative to ongoing activities. Biological opinions have been rendered by the US Fish and Wildlife Service and National Marine Fisheries Service. The species involved in the consultations include the Red-Cockaded Woodpecker, American Alligator, Eastern Brown Pelican, Atlantic Loggerhead, Green Ridley, Leatherback and Hawksbill Sea Turtles, the Fin, Humpback, Right and Sei Whales.

b. Thirty-five sea turtle nests were monitored by the wildlife biologist and two temporary technicians during the 1985 nesting season. A Green Sea Turtle which previously nested four times in 1980 returned to nest five times during the 1985 nesting season. Verification was made by a tag which was placed on her front flipper in 1980. These are the first nestings recorded of the Green Turtle north of the Georgia coastline.

c. The nesting and foraging habitat of the endangered Red-Cockaded Woodpecker was prescribe burned under the biological opinion guidelines rendered for the species. Annual surveys were conducted involving Red-Cockaded Woodpecker and American Alligator populations.

d. Thirty nesting boxes for Eastern Bluebirds were erected along trails in pine timberlands by Boy Scouts from the base participation in a conservation project. These nesting boxes along with the 350 previously erected boxes by management personnel were maintained and monitored during the year. 64% of the boxes were used for nesting by bluebirds during the year.

3. Forest Management. Forest management is presently being carried out on 76,466 acres. Forest management generally consist of timber management activities associated with the harvesting of timber and wildlife habitat management and forest protection. The forested land is managed on a sustained yield, multiple-use management system on a 10-year cutting cycle and a 100-year rotation.

a. Budget

Funds authorized	\$405,000
Funds obligated	370,538

b. Receipts - Sales of forest products

<u>Product</u>	<u>Volumes</u>
Pine Sawtimber	4,401 MBF
Pine Pulpwood	5,687 Cords
Hardwood Pulpwood	97 Cords



Total Proceeds

\$637,989

c. Timber Marked - All marking was done by in-house personnel in compartments 2, 3, 8, 11, 31, 49, 51 and 60. These marked areas totaled 906 acres with a volume of 2,400 MBF pine sawtimber and 2,200 cords of pine pulpwood.

d. Reforestation

(1) Acres planted	117
(2) Acres KG'ed	121
(3) Acres windrowed by root rake	121
(4) Acres bedded	110
(5) Acres chopped for seed bed preparation	45

e. Timber Stand Improvement

(1) Acres drum chopped	375
(2) Acres treated by hand	115

f. Unpaved Forest Access Roads

(1) Graded and repaired an estimated 7 3/4 miles.
(2) Hauled and spread 3,600 tons of stone.
(3) Purchased seed and fertilizer for erosion control and wildlife habitat improvement on 15 miles of unpaved roads.

g. Fire Protection and Suppression

(1) Prescribed Burning

(a) Flagged and secured approximately 80 miles of fireline.

(b) Prescribed burned approximately 5,839 acres in seven compartments.

(c) Controlled burned approximately 11,000 acres of range and impact areas.

(2) Manned fire towers approximately 100 man-days for forest fire detection.

(3) Suppressed 75 wildfires that burned 1,870 acres.



h. Insect and Disease Control

(1) Four southern Pine Beetle detection flights.

(2) 48 suspected Southern Pine Beetle infestation spots were ground checked.

(3) Control measures taken on three Southern Pine Beetle infestations.

(4) In cooperation with the US Forest Service, NREAD, personnel monitored 21 Gypsy Moth traps with two moths trapped.

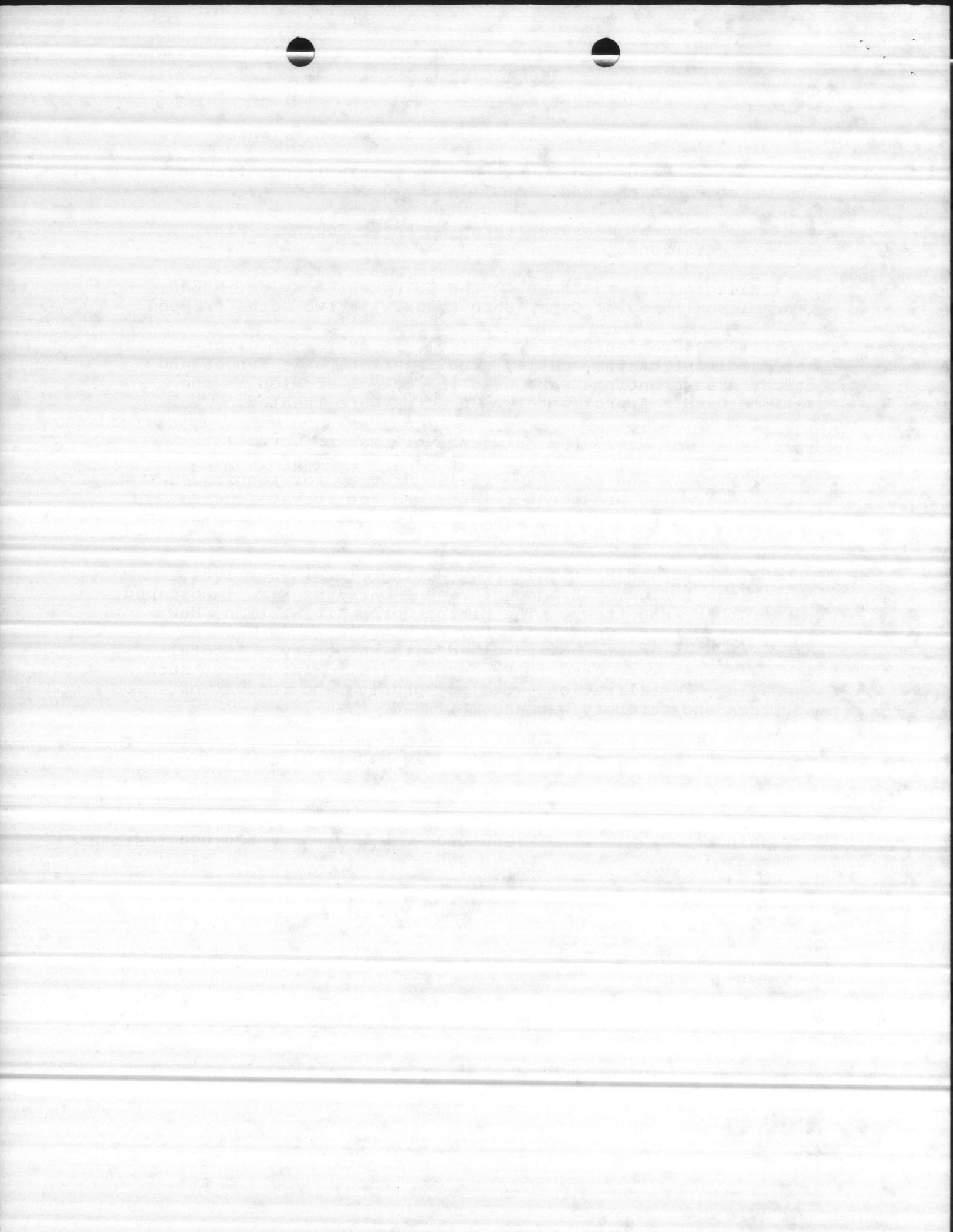
4. Soil Conservation/Erosion Control. A system of diversions, sediment basins, outlet stabilization, silt fences and critical area plantings were used to control erosion at the base Ammo Dump. Approximately 120 acres were treated.

5. Agricultural Use/Range Maintenance. Marine Corps Base responded to CMC request for proposed projects under the agricultural and grazing outlease program for funding during FY-86. The project submitted was for forest access roads. Funding for the project submitted has been approved and will be accomplished during FY-86.

6. Landscaping and Horticulture. During fiscal year 1984, 20 buildings including headquarters and barracks were landscaped with shrubbery and trees. The Marine Corps Air Station, New River, Camp Geiger, Courthouse Bay entrance area as well as Sneads Ferry Gate were relandscaped with shrubbery. A total of 4,300 plants were used in FY-84. General maintenance, such as spraying, fertilization, weeding, pruning and removal of dead trees and shrubbery was accomplished.

7. Outdoor Recreation

<u>Type</u>	<u>Trips</u>	<u>Hours</u>
Hunting	13,412	69,182
Fishing	150,000	620,000 (estimate)
Trapping	460	1,840 "



HISTORICAL/ARCHAEOLOGICAL RESOURCE MANAGEMENT

1. Approximately 10-12 skeletal remains were removed from an Indian Ossuary at Jarretts Point. \$10,000 was transferred to the US Park Service to facilitate the removal, study and curation. The US Park Service coordinated a contract with the Department of Anthropology, University of North Carolina at Wilmington, Wilmington, North Carolina.
2. The development of a Cultural Resources Management Plan was initiated with assistance from the National Park Service. The plan will confirm the significance of archaeological and historical sites and develop protective measures for significant site management.

