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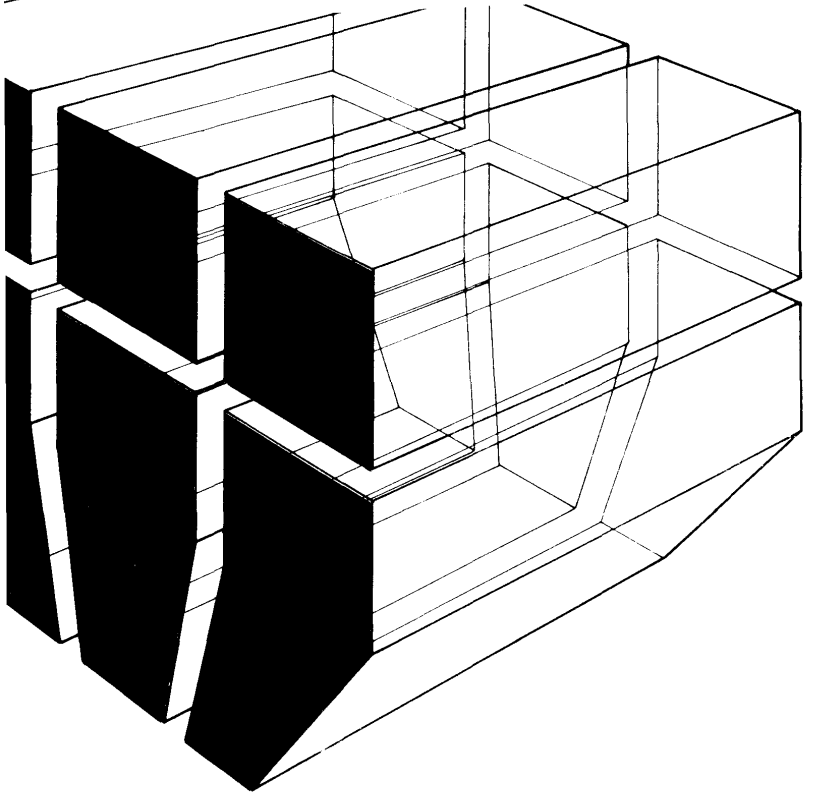
DETERMINATION OF THE IMPACT OF ENVIRONMENTAL REGULATIONS ON ARMY UNIT TRAINING



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This report presents the results of a study which assessed the effects of Federal environmental laws and regulations on Army unit training. A survey/questionnaire was prepared and distributed to all Forces Command (FORSCOM) installation environmental coordinators and Division/Separate Brigade-level training officers. Two installations were visited to obtain a more detailed evaluation.

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The surveys and visits showed that only minimal training capabilities were lost due to compliance with environmental regulations. Most potential problems can be avoided through coordinated planning during the earliest stage of facility development.

FOREWORD

This study was conducted for the Assistant Chief of Engineers by the Environmental Division (EN) of the U. S. Army Construction Engineering Research Laboratory (CERL). The work was done under Project 4A762720A896, "Environmental Quality for Construction and Operation of Military Facilities"; Task 01, "Environmental Quality Management for Military Facilities"; Work Unit 026, "Estimation of Regulatory Impacts on Army Operations." Mr. Gary Robinson (DAEN-ZCE) was the Technical Monitor.

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DETERMINATION OF THE IMPACT OF ENVIRONMENTAL REGULATIONS ON ARMY UNIT TRAINING

1 INTRODUCTION

Background

The training status of Forces Command (FORSCOM) units is one of the most important concerns of the Army; therefore, every requirement imposed on these units which directly affects training must be scrutinized for its potential adverse consequences. Environmental mandates have been externally imposed on Army units and installations by all levels of government. The impacts of these requirements may affect the Army's combat readiness by adversely affecting training. Thus, there is a need to study the effects–both real and perceived–of complying with these regulations.

Objective

The objective of this report was to learn whether compliance with environmental regulations has created or will create adverse effects on combat readiness.

Approach

A survey which addressed the issue of effects of environmental constraints on combat readiness was sent to FORSCOM training personnel (G-3 training personnel) and to each facility's environmental coordinator (Chapter 3). Two FORSCOM installations (Fort Campbell, KY, and Fort Stewart, GA) were visited to obtain more detailed information (Chapter 4).

Mode of Technology Transfer

The information in this report is usable as presented and will be disseminated to the appropriate DA training, planning, and environmental personnel.

2 THE NEED FOR COMBAT READINESS

FORSCOM prepares Army forces for mobilization and commitment in support of national policy. One of its primary missions is to train and motivate individuals and units to perform assigned missions.[1] The primary issue addressed in this report is whether compliance with environmental regulations has any adverse effects, either real or perceived, on training and thus, on combat readiness. Measures of combat readiness (other than those concerning troop strength or equipment) are very subjective; therefore, a surrogate measure–the degree to which Army Training and Evaluation Program (ARTEP) training is being accomplished–was used.

Some FORSCOM personnel felt that training at several installations is being degraded because of the need to comply with environmental regulations. The questions to be answered regarding these concerns are: "Is degradation occurring?", and "Is that degradation actually caused by compliance with environmental constraints?"

Training Effectiveness and Its Importance to Combat Readiness

One aspect of combat always remains the same. To win, fire and maneuver units must be used at a critical time and place on the battlefield. Modern mechanized armies have greatly increased the velocity and range of battlefield action. Today, the U. S. Army can bring an enormous amount of combat power to bear in a very short time and from great distances. The intensity of this type of combat causes heavy losses. The Army least prepared for combat because of inadequate training will suffer such high casualties that it will soon be unable to perform its mission. Obviously, the Army must acquire "simulated combat" experience before actual combat occurs. To do this, the training environment must duplicate actual battlefield conditions to the maximum extent possible.[2]

"To prevent drastic losses and to win on today's battlefield, the Army must practice in peacetime the first battle of the next war. Soldiers must achieve and maintain maximum proficiency with their weapon systems. Leaders must practice the techniques of combat. In other words, training must simulate actual battlefield conditions as much as possible."[3]

ARTEP duplicates and defines battlefield conditions. It defines the tasks that units must actually perform in combat. It indicates the conditions under which the tasks will be performed and the standards

[1] General Robert M. Shoemaker, Commanding General, U.S. Army Forces Command, "With Clear Missions, Definitive Objectives," *ARMY - 1979 Green Book,* Vol 29, No. 10 (Association of the U.S. Army, October 1979).

[2] *Training Land–Unit Training Land Requirements,* Training Circular 25-1 (Headquarters, Department of the Army, August, 1978), p 19.

[3] *Training Land–Unit Training Land Requirements,* p 28.

which must be met to insure combat readiness. The prime element in developing a realistic training area is having sufficient maneuver lands. The Army must also have land (air space) for conducting realistic electronic warfare and close air support training.

Maneuver Area Deficiencies

Commanders need to subtract "unusable" land from their gross acreage figures in order to assess the *quality* of their training areas. As shown in Table 1, "unusable" land includes many items. Maneuver units may sometimes achieve adequate training on smaller areas if ideal land is available, especially if there are extremes in terrain relief and ground cover. However, ARTEP land requirements may still not be met if large areas of land do not provide realistic training conditions.

Effect of Maneuver Area Deficiencies on Training

Measuring combat readiness is subjective, so the effect of land shortcomings/deficiencies is hard to define. For example, what are the implications if a unit has 10 percent less realistic training land than is advised by ARTEP? It is impossible to determine the losses in lives and equipment that may be caused by inadequate or unrealistic training. ARTEP provides critical combat missions and the maneuver land necessary for a training exercise. For example, ARTEP 71-2 (Table 2)[4] lists missions and maneuver area requirements for a mechanized infantry/tank battalion task force.

It is possible to train for each mission alone. However, at some point, the unit must undertake an extended field exercise which comprises all of its critical missions in a *realistic* sequence, against an opposing force. "A training environment that restricts a unit is not representative of battlefield conditions and fails to prepare units for combat."[5]

Can Combat Readiness and Environmental Protection Be Accomplished Simultaneously?

In a special report entitled *Environmental Protection Versus Combat Readiness,*[6] one primary issue was of concern:

> Combat readiness requires a multitude of realistic training activities which can impinge

[4] *Training Land–Unit Training Land Requirements,* p 96.

[5] *Training Land–Unit Training Land Requirements,* p 96.

[6] MG James Vaught, *Environmental Protection Versus Combat Readiness,* Special Report (Headquarters, 24th Infantry Division, Fort Stewart, GA), p 1.

Table 1
Unusable Land
(From *Training Land–Unit Training Land Requirements,* Training Circular 25-1, [Headquarters, Department of the Army, August 1978], p 31.)

Areas for Consideration	Remarks
Water Sites	Post utilities, recreation areas, and large bodies of water that exceed water training requirements.
Environmental Restrictions	Erosion control, pollution prevention, noise avoidance, wildlife management, deadfall, endangered species protection, forestation, and archaeological artifacts protection.
Encroachment	Growing cities and competing projects.
Shape	Irregular post outlines and noncontiguous parcels that prevent movement of channelized forces.
Access and Availability	Airfields, ammunition storage sites, national parks, and national forests.
Other Facilities	Highways, easements, historic sites, cemeteries, and Indian reservations.

Table 2
ARTEP 71-2
(From *Training Land–Unit Training Land Requirements*, Training Circular 25-1 [Headquarters, Department of the Army, August 1978], p 96.)

- Delay (12 x 29 km = 348 km^2 or 82,531 acres),
- Exploitation (27 x 12 km = 324 km^2 or 74,130 acres),
- Active Defense (26 x 10 km = 260 km^2 or 60,292 acres),
- Disengagement (21 x 19 km = 228 km^2 or 52,385 acres),
- Deliberate attack (19 x 7 km = 133 km^2 or 32,864 acres),
- Night attack (22 x 6 cm = 132 km^2 or 32,619 acres),
- Movement to contact (18 x 7 km = 126 km^2 or 31,135 acres),
- Hasty attack (13 x 7 km = 91 km^2 or 22,486 acres), and
- Military operations in built-up area (MOBA) (3 x 3 km = 9 km^2 or 2,224 acres).

> upon our environment. We fully recognize our current responsibility as noted in Federal Law, Executive Orders, and Department of Defense/ Department of the Army directives and regulations, to act as trustee of the environment and to take a leadership role in fulfilling our basic mission consistent with environmental laws and policies. Simply, we must do everything possible to minimize or avoid environmental impact as we move forward in the realistic training of our soldiers. *However, it may be that our dual responsibility of realistic combat readiness and total environmental protection is incompatible.*

Should concerns for the environment transcend national defense considerations? Many people believe that to be the case and "seek to block our efforts regardless of military contingencies."[7]

> The United States Army must be prepared to fight the land battle in all types of environments and our success depends on our ability to move over the earth's surface, while taking full advantage of the terrain and man's changes to that terrain. To survive we must use elevations and depressions, drainage, and vegetation to our advantage or we will be defeated. If we are to have a chance to win the battle, it is necessary to have mobility across the battlefield in tanks, armored personnel carriers and self-propelled artillery. We have a continually diminishing training area available to our forces which is disadvantageous because of the increase in weapon lethality and battlefield mobility. As the maximum range of our weapons is extended, training areas that were sufficient in the past are rapidly becoming inadequate and the problem is compounded by the requirements of various Federal and state agencies which further restrict the Army's use of its reservations and air space overhead.[8]

Since it is unlikely that military establishments will be given more land, it is essential that the use of training land that is available be totally maximized. Soldiers need an environment that is consistent with what they will encounter in actual combat. "We must train them on *realistic* fire and maneuver courses, extending across varied terrain, which deploys them over actual distances in realistic times."[9]

[7] *Environmental Protection Versus Combat Readiness*, p 7.

[8] *Environmental Protection Versus Combat Readiness*, p 9.

[9] *Environmental Protection Versus Combat Readiness*, p 11.

Obviously, combat and combat support vehicles are destructive of the environment.

> Realistic training requires coordinated and dynamic movement of multiple heavy armored vehicles (tanks weighing approximately 53 tons) and large numbers of personnel, both mounted and dismounted, across varied training areas and this is, in itself, destructive of the environment. Even with considerable restraint on the part of soldiers and their concerned commanders, trees and plants are scarred and uprooted, habitats of animals and birds are disrupted, stream banks and road networks are altered and eroded, and fish colonies are disturbed. We attempt to minimize the damage and disruption by keeping ourselves on standard routes but this constricts our training flexibility.[10] . . .Simply, there is no substitute for realistic training.[11]

3 SURVEY

CERL drew up and distributed a survey (see the Appendix) to the Environmental Coordinators and G-3 training officers of 19 installations. The objective of the survey was to learn the effects of environmental regulations on training capabilities and combat readiness, details about adverse effects on training, and installation environmental characteristics that led to training restrictions. Following are details of each installation's responses.

Summary of Installation Responses

Office of the Deputy Chief of Staff for Training, Headquarters of the Sixth Army, Presidio of San Francisco

Through proper planning, units whose training has environmental impact (e.g., engineering) have been able to prevent significant impacts on mission-essential training; however, restrictions on the use of smokes has seriously restricted realistic training under "dirty battlefield" conditions for all Sixth Army units. Federal Clean Air and Water Acts prevent using these conditions which train personnel how to react to chemical and biological attack. Nuclear/biological/chemical (NBC) units are restricted in their chemical and smoke dispersant training.

National Training Center, Fort Irwin, CA

The on-going archaeological survey, protection, and preservation program at the National Training Center (NTC) has not caused a loss of training time or severely restricted access to training areas. Protective fences are used as a short-term mitigative measure at some archaeological sites; these fenced areas are labeled as mine fields or contaminated areas and are used for training. Data recovery measures have been used on some archaeological sites so that they can eventually be recovered as training areas. Stopping the survey and data recovery program could cause undesirable restrictions within training areas.

The laws which apply to archaeological sites include: Executive Order 11593–Protection and Enhancement of the Cultural Environment, Archaeological and Historic Preservation Act of 1974, National Environmental Policy Act of 1969, National Historic Preservation Act of 1966, the Historic Site Act of 1935, and the Antiquities Act of 1906.

The planned archaeological surveys of Fort Irwin lands should be completed as soon as possible so that training will not be adversely affected. Funding should be allocated to complete all surveys by 1983, before the full training mission of NTC begins.

Fort McCoy, WI

No training and/or readiness capabilities have been or will be lost at this installation due to compliance with environmental regulations. However, collective training will be stressed in the future. In addition, the large safety fans of new weapons systems will require training facilities to have large areas of land for impact and maneuver areas. This would increase the amount and scope of environmental degradation. The only way to avoid potential problems is by early coordinated planning.

Fort Drum, NY

No training and/or readiness capabilities have been or will be lost at the installation due to compliance with environmental regulations.

Fort Lewis, WA

Realistic Antitank Ditch (ATD) training in tactical scenarios has been encumbered at Fort Lewis while its

[10] *Environmental Protection Versus Combat Readiness,* p 13.

[11] *Environmental Protection Versus Combat Readiness,* p 15.

possible environmental impacts are reviewed. The installation's draft EIS, written in 1979 to assess the environmental impacts of all its on-going programs, states that ATD training rarely occurs at Fort Lewis and that most large-scale ditching operations occur at YFC, a subinstallation. However, due to increased transportation costs and differences in soil conditions, large-scale ditching operations will now be required at Fort Lewis.

The G-3 for the 9th Infantry Division believes ATD training and combat readiness for the 15th Engineering Battalion has been compromised by the need for environmental review. An interim solution was to allow ditching up to 100 m in length with a cumulative total of less than 1000 m per exercise until the impacts have been assessed. Therefore, antitank ditches of 1500, 300, and 150 m in length were cancelled for a field technical exercise (FTX). The area in question is a prairie–savannah, a unique type of habitat in western Washington–and is heavily used by the public.

Another issue involves the High Technology Test Bed (HTTB), a research and development tenant. A MICLIC (a mine-breaching system) was to be test-fired at Fort Lewis. Since Fort Lewis limits demolition charges to 4 lb, immediate concerns were for the noise levels and potential damage to private property. An 8-in. howitzer projectile (HE) exploding in the impact area would generate sound pressures of about 103 dB. However, firing 1750 lb of C-4 would generate noise levels of about 137 dB at the Roy city limits. Therefore, the Roy citizens would experience a shock wave 50 times greater than current levels. Since glass breakage occurs now, more breakage is probable if sound pressures are increased. The rocket itself was fired, but the charge did not explode. If it had, and significant damage occurred, the residents of Roy would probably have sued the Army. These problems could have been avoided or reduced if there had been early coordination between the Environmental Office and proponents of the action.

Some characteristics of Fort Lewis have led to environmental restrictions on training. These include: (1) Aster Curtis, a candidate endangered species, which occurs on Weir and Johnson Prairies; (2) the Nisqually River and Muck Creek, which are sensitive salmon spawning areas and are frequented by nesting bald eagles from December to March; (3) Fort Lewis and its subinstallations, which have numerous historic and archaeological sites.

Future training requirements or testing that might be impacted by environmental regulations include: the work of HTTB in research and development; the use of new, larger-caliber artillery weapon systems and new multi-rocket launchers; and increased use of barrier training, abatis, and ditching. Problems could be averted if proposed programs and actions are assessed at the proper level and early enough to prepare the necessary environmental documentation. The environmental documents should be circulated and reviewed with other planning documents. The environmental documentation should not become a justification document after a course of action has been chosen.

Fort Stewart, GA

No training and/or readiness capabilities have been or will be lost because of environmental considerations. However, ranges have been modified because of colonies of Red Cockaded Woodpeckers which are protected under the Endangered Species Act; these inconveniences have been minimal. These colonies must be considered before developing new ranges.

Fort Campbell, KY

No training and/or combat readiness capabilities have been lost because of environmental constraints; however, there is some concern with certain equipment readiness. Motor maintenance buildings with coal-fired 1942-era heating plants are not heated due to the air pollution constraints of the Clean Air Act. These buildings house the divisional direct support maintenance and medical battalion and other vehicle maintenance areas. Because coal-fired heating plants cannot be replaced with oil, etc., no replacement heating systems have been installed. Thus, in cold weather, vital maintenance activities either are not done or are delayed; this adversely affects equipment readiness. These circumstances also affect personnel readiness, because individuals may decide not to reenlist due to the poor working conditions. This problem could be avoided by funding and constructing adequate maintenance facilities.

Although not yet a major problem, the presence of the Tennessee Valley Authority's Land Between the Lakes Recreation Area and its associated endangered species, such as eagles and ospreys, restricts flight patterns. Helicopter and artillery noise also restrict flight patterns.

Fort Devens, MA

There have been no significant losses in training and/or readiness capabilities due to environmental

constraints. However, there have been delays in implementing some full-time training programs (e.g., mortar firing) due to required environmental studies. These delays occurred mainly because environmental concerns were not considered early enough in the planning.

Several future Army training requirements and material or weapons development requirements may be adversely affected by environmental regulations. For example, the FORSCOM Range Renovation/Force Modernization Program does not have environmental documentation; however, this could be avoided by a MACOM/DA EIS.

Another problem is the effect of EPA/State Hazardous Waste Regulations on explosives/ordnance/demolitions operations; this could be avoided through a Congressional/Presidential exemption. A similar issue is the effect of the Clean Air Act and State Inspection and Maintenance Program requirements on military vehicles. This could be solved with a liberal exemption policy based on national security requirements and by using only a few military vehicles.

Environmental considerations have or will play a major role in several other actions at Fort Devens:

1. Possible expansion of Moore Army Airfield

2. Master plan for Sudbury Annex

3. Restricted airspace expansion—Fort Devens

4. Institution of mortar/howitzer firing at Fort Devens

5. Effluent control from vehicle washing systems post-wide

6. Fire training exercises involving "waste" aviation fuels.

The installation has had exceptional cooperation from most Federal/State regulatory agencies with alleviating environmentally restrictive situations involving national defense.

However, parties with other interests (e.g., economic) will sometimes use environmental requirements to prevent/delay/reduce an action. This emphasizes the importance of including environmental personnel in the earliest planning stages.

Fort Clayton, Panama

Most of the Federal laws listed in the survey do not apply in Panama. Units in Panama must abide by general environmental laws applicable in Panama. Thus, the environmental considerations of the Panama Canal Treaty of 1977 apply.[12]

No training and/or readiness capabilities have been lost at the 193rd Infantry Brigade due to environmental regulations. However, the Joint Commission on the Environment (JCE) may change or increase environmental requirements for future actions in the Panama Canal area. The JCE consists of three Panamanian members and three U.S. members. Some field training exercises must be performed in areas not currently licensed to the U.S. Army. Thus, the Brigade must prepare many environmental documents to obtain a land license from the Panama Canal Commission.

In 1981, the JCE agreed that the types of projects requiring environmental assessments should include projects involving wetlands or coastal areas; areas where there might be endangered species or significant amounts of wildlife; forested areas (particularly in hilly or mountainous parts of the Canal Area); and areas where fisheries are important. All of these characteristics occur in the training ranges/areas.

Fort Riley, KS

No training and/or readiness capabilities have been or are about to be lost due to environmental considerations.

Fort Hood, TX

No training and/or readiness capabilities have been or are about to be lost at Fort Hood due to environmental constraints. However, unit training is often conducted in a reduced maneuver area due to the number of units competing for the available land.

Some environmental issues are of concern and may potentially affect training:

1. Archaeological sites

2. Protection of nesting grounds for the Golden Cheeked Warbler (an endangered species)

[12]Memo, HQDA, Office of the General Counsel, 29 September 1980, Subject: Policy Guidance on 193rd Infantry Brigade Environmental Program.

3. Preservation of a stand of Big-Tooth Maple in the Owl Creek Mountains on the Eastern portion of the reservation (isolated population from the main distribution area of the species).

Environmental regulations may adversely affect future construction of a multi-purpose range complex; this complex will meet the training requirements for the M-1 Tank, M-2 Infantry Fighting Vehicle, and M-3 Cav Fighting Vehicle. Several options for avoiding the problem include:

1. Open the Eastern portion of the reservation to track vehicles to support ARTEP training

2. Amend the regulation to include the expansion of training areas within the installation boundaries as a categorical exclusion under NEPA

3. Provide additional funding for archaeological studies to enable the installation to determine which sites must be preserved.

Fort Polk, LA

No significant training and/or readiness capabilities have been lost due to environmental constraints. Fort Polk is part of the native habitat of the Red Cockaded Woodpecker (an endangered species); however, protective regulations have affected training only minimally. Environmental regulations may adversely affect future Army training requirements. Timber growth and understory development during the past 50 years have reduced intravisibility and maneuverability in woodlands; as a result, the Division has been unable to use all training areas. The Army fee-owns only half of Fort Polk's acreage; the other half is fee-owned by the U.S. Forest Service (USFS). A plan to systematically modify the ground cover of the forested training areas of the Army-owned portion has been developed and is being implemented. This will restore and maintain its utility for training and for maintaining readiness.

Modifications on USFS fee-owned lands have been hindered, because there are problems with the regulations under which the 40,000 acres that the Army has an intensive use agreement on are managed. Forested training areas on USFS lands cannot be modified to improve their training usefulness. USFS regulations prevent thinning stands to the minimum acceptable basal area for maneuvering armor units. In addition, all forested areas must be regenerated within 5 years after logging; the size of the silvicultural treatment area is also regulated. Thus, these regulations may severely affect anticipated acceleration of training needs and range requirements.

Although discussions with the USFS have not yet solved these problems, there are two possibilities:

1. The USFS could get an exemption from or change their timber management regulations which conflict with full military use of the land

2. The Army could acquire fee-ownership of this property.

Fort McPherson, GA

Although no training and/or readiness capabilities have been lost due to environmental constraints, there is a potential problem. Civilians living adjacent to the post near the firing range have complained about noise. Noise problems have resulted because of a lack of adequate safety barrier berming, which shields surrounding areas from stray projectiles and excessive noise. This could be alleviated by opening and using the range at Fort Gillem, a subinstallation of Fort McPherson which is presently unused.

Fort Richardson, AK

Environmental regulations have not adversely affected long-range training and/or combat readiness capabilities at Fort Richardson. Overall, the short-range impact of the current environmental legislation on Army training is more apparent; i.e., restrictions have precluded the use of field latrines and thus required many hours of flying time to return frozen wastes to the garrison for incineration or dumping into oxidation ponds. This requirement has limited the number of available flying hours, the amount of mandated training, and the amount of administrative time.

Environmental legislation has severely curtailed long-range deployments to determine mobility and communication abilities. It has limited realistic training exercises in which communications traffic was at a level usually found in combat. However, the major impact has resulted from the Federal Land Management Policy Act of 1976, which severely limits the Bureau of Land Management's issuance of Special Land Use Permits to the active military forces. This restriction was adopted by the State of Alaska, Division of Lands, and applied to the Army's requests for off-post training lands for special exercises. All off-post exercises are now severely restricted and require extensive justification, public hearings, and long-range planning.

The Joint Chiefs of Staff (JCS)-sponsored readiness exercise (BRIM FROST 81) had a minor problem in complying with the provisions of the National Historic Preservation Act of 1966 and Executive Order 11593 on Protection of Cultural Resources. The major training area contains several archaeological sites identified as significant in Alaskan history that had to be avoided. The sites could not be posted, because that would draw attention to their location and encourage amateur archaeologists to exploit them. The unit commanders were provided with the coordinates and instructed to keep troops away from these locations. While attempts were made to comply, some sites were affected by vehicle traffic. The 172d Infantry Brigade (AK) tried to have these sites examined and the archaeological/historical data recovered to permit troop maneuvers over these areas; however, funds were not secured early enough in the year to let a contract for archaeological recovery.

Clarifying the wetlands/navigable waterways definition issue would remove many lands and streams from Section 404 Dredge and Fill Permit requirements. (Permits from the Corps of Engineers are required for stream crossings, vehicle use, etc.) This would speed project development and reduce paperwork.

The most severe environmental restrictions on training are imposed by the state's anadromous stream uses and crossing regulations and water use permits for use of surface waters. These regulations protect aquatic life from excessive siltation. While archaeological sites, wetlands, and endangered species regulations do have impacts, they are minor compared to those caused by the anadromous stream crossing problem.

Army training activities in Alaska have been minimal; however, all required training objectives have been met even though the scope of the exercises was reduced. There do not appear to be any long-range adverse effects on training due to environmental restrictions; however, some conditions may not be totally acceptable to all personnel involved in the exercise.

Fort Bragg, NC

Although restrictions on training areas do not seriously affect combat readiness, they do impose artificial controls on units training for war.

The Clean Water Act and the Fish and Wildlife Coordination Act have restricted readiness training of combat engineer units in the construction and emplacement of obstacles. Any obstacle emplacement which involves excavation is strictly controlled. Several types of training are involved, including combat engineer training and anti-armor defense training. These Acts limit the areas available for obstacle emplacement and restrict the types of obstacles.

The Endangered Species Act and the Fish and Wildlife Coordination Act have inhibited fire and maneuver by tactical units in areas inhabited by endangered species. The types of training involved include combat arms fire and maneuver, including blank fire and demolition training. The restrictions reduce the amount of maneuver space available to units. These adverse effects might be alleviated by doing an updated study of the endangered species causing the restrictions (i.e., the Red Cockaded Woodpecker). The Longleaf Pine, which is native to Fort Bragg, is apparently the only tree in which the Red Cockaded Woodpecker will nest. Evidence indicates that noise and activity have little effect on the woodpecker colonies. For example, colonies inhabiting the periphery of impact areas where artillery rounds explode daily appear to suffer no ill effects.

The Endangered Species Act and the Wildlife Coordination Act have limited use of natural materials during field training for building bunkers, weapons positions, trestle bridges, and camouflage. These Acts have also limited the extent of field fortifications and opportunities for units to practice those construction skills. The sale of usable timber by the installation is probably also responsible for limitations on the use of natural materials.

A final problem is civilian encroachment on Fort Bragg boundaries. This will likely lead to increased noise complaints in the near future. New weapons which have larger calibers and increased density might make the acquisition of additional buffer zones desirable.

Presidio of San Francisco

Although training personnel feel that the installation has not lost training or readiness capabilities because of environmental laws, the Environmental Coordinator notes some possible problems. Training has been hampered in the past by lack of adequate close-in training facilities. The time required to travel to distant training sites is, in effect, lost training time, and the mobility energy costs involved further limit training flexibility. Development of adequate close-in training facilities in a metropolitan region such as the San Francisco Bay Area may be subject to significant

environmental constraints. In fact, this occurred in the attempt to develop Camp Parks–a subinstallation–to a fully adequate Reserve training facility.

The type of training involved includes light weapons and squad/platoon maneuvers. The decision to fully implement development plans is still unresolved pending the completion of an EIS. Three characteristics may restrict training in the Camp Parks Request for Technical Assistance (RFTA): noise sensitivity, incompatibility with local land use, and endangered species.

The delay in plan development occurred partly because environmental requirements were not incorporated in the very earliest phase of the planning; thus, resources were not programmed accordingly.

The problem is further increased when groups, whose interests are not necessarily environmental, use environmental documents as a means to intervene in an action.

Adverse effects can be minimized by including NEPA requirements in the Army decision-making process. However, there are rigid procedural requirements for filing notice, public circulation, and review and comment periods for NEPA documents; this may preclude timely implementation of national defense actions, so waivers to NEPA procedures may be required. A clear, concise system for balancing national defense against environmental concerns has been suggested as an alternative to the current documentation processes; this would be used during periods of national defense emergency.

Fort Sheridan, IL

No training and/or readiness capabilities have been or are about to be lost due to environmental constraints. However, reserve units requiring training with smoke generators cannot operate all generators simultaneously; under certain conditions, the Clean Air Act prevents use of any of them (wind direction, inversion, air episode). This is a potentially serious problem, since at some times, all training may have to be stopped. The problem could be avoided if the reserve units used training areas in Indiana or Wisconsin.

Fort Carson, CO

No training and/or readiness capabilities have been lost at Fort Carson due to environmental regulations. However, there is a lack of contiguous training space. Thus, there is not enough space to train leaders in using the wide-unit frontages and depths that they may experience in combat.

Environmental personnel have temporarily placed certain areas off limits to allow regrowth of vegetation. However, due to limited training areas, there is an understanding that if it is necessary to use these areas, the G3 can override this decision. Unfortunately, altitude and lack of annual moisture is not conducive to regrowth.

Fort Indiantown Gap and Oakdale OSE, PA

No training and/or readiness capabilities have been or are about to be lost due to environmental constraints.

Discussion of Survey Results

These survey results suggest that while environmental regulations have caused inconvenience and delay at some installations, they have not caused significant adverse effects on combat readiness. Many of the problems described were or could have been resolved by involving environmental personnel early in the unit training planning process and by timely coordination with outside environmental agencies. A few of the problems cited, including the simulation of "dirty battlefield" conditions and the provision of realistic NBC training exercises, may be difficult to solve through planning. Further study of these specific conflicts may suggest a need for national security exemptions for these vital but inherently environmentally destructive training activities. A third class of environment/training conflict is issues raised by groups whose real interests are not environmental. The use of environmental laws to delay or obstruct Federal activities to which groups are opposed for ideological or economic reasons is common not just to the Army but to many Federal agencies. National security exemptions may be required to overcome such problems; however, none of the respondents identified a need for such requirements at this time.

Many environmental constraints on training were minimized or mitigated by relocation or by incorporating the constraints into the training exercise in a natural way (e.g., archaeological sites were designated as mine fields or contaminated areas). Relocation is possible only when an installation has suitable alternate sites. The number and placement of minefields and contaminated areas which are actually archaeological sites, woodpecker colonies, or other environmentally sensitive areas may or may not be consistent with realistic battlefield simulation. As the long-term trend towards a more spatially dispersed battlefield continues

and as larger-caliber weapons require longer ranges and more extensive safety fans, it may be more difficult to accommodate some environmental constraints. Several respondents expressed concerns about environmental restrictions on the availability or usability of already limited Army lands in the future when more extensive tracts of land will be needed for realistic maneuvers.

In this study, it was assumed that units which successfully completed their ARTEP training could be considered combat-ready. Several officers interviewed during this study indicated that no commander would report his unit less than combat-ready because of environmental regulations; however, many felt that their troops could be "more ready" if they had received more realistic training. It is beyond the scope of this research to evaluate the legitimacy of this perception. Determination of combat readiness is necessarily somewhat subjective, requiring the military judgment and experience of unit commanders. However, to the extent that combat readiness and ARTEP completion can be equated, no significant adverse effects on combat readiness were found to result from environmental restrictions.

4 SITE VISITS

Two installations were visited to discuss the issue of environmental problems more thoroughly with the G-3 training officer and environmental coordinator. The two installations visited were Fort Campbell, KY, and Fort Stewart, GA.

Fort Campbell, KY

Background of Installation

Fort Campbell consists of 105,347 acres located in southwestern Kentucky and north-central Tennessee. Hence, the environmental constraints of both states must be considered. There are 22,000 active-duty personnel at the installation; 28,000 military and their dependents live on-post.

Fort Campbell's primary mission is to support and train the 101st Airborne Division (Air Assault) and other associated FORSCOM units for a variety of assigned combat and combat-related missions.

The commander of the installation is responsible for the maintenance and upkeep of about 3150 buildings and numerous other facilities supporting the installation mission; these include utility systems, roads, railways, airfields, wooded training areas, and numerous trucks, buses, helicopters, weapons, and communications equipment.

The 101st Airborne Division is composed of three infantry brigades plus Division Artillery, 101st Aviation Group, Division Support Command, 2nd Squadron, 17th Cavalry, 326th Engineer Battalion, 501st Signal Battalion, 101st Military Police Company, 101st Military Intelligence Company, 265th Army Security Agency Co., and 1st Battalion, 3rd Air Defense Artillery. Several non-Divisional units are also housed and trained on Fort Campbell under the direction of Headquarters Command.

In the past, Fort Campbell has supported a variety of training functions and activities, ranging from unit training for armored, infantry, airborne, and air assault divisions to Basic Combat Training (BCT). The 101st Airborne Division is organized, trained, and equipped for rapid deployment to meet contingencies worldwide. The infantry is considered to be "light infantry" with almost no organic ground transportation ability. Mobility for both infantry and combat support (field artillery, combat engineers, cavalry, etc.) is provided primarily by 414 helicopters assigned to the Division. Thus, when employed in an operational area, the high degree of mobility provided by these aviation assets gives the Division the capability to influence tactically large geographic areas encompassing all types of terrain.

The primary training objectives at Fort Campbell are to insure that all individuals and units are totally prepared to perform their assigned missions in a combat situation. Emphasis is on crew, squad, section, platoon, company, and battalion training to attain a high degree of physical fitness, combined arms training using helicopter support, and live-fire exercises and weapons proficiency. Operational readiness training at Fort Campbell represents the final phrase of training for units which have completed all prior training requirements and which must maintain the highest state of combat proficiency.

Fort Campbell has outlined various training programs and guidelines to help unit commanders acquire and maintain full combat readiness. Examples of exercises conducted from squad through battalion levels for all types of units are: infantry squad in the attack, platoon night defense, rifle company air assault, howitzer gunner qualification, vulcan battery in combat assault, breeching of wire obstacles, establishing helicopter rapid refuel point, and construction of a three-rope bridge.

Two general types of fixed-wing operations support the Division: deployment training and air support during field exercises. Most of these activities are operations by various U.S. Air Force, Navy, Marine Corps, and Air National Guard Units. Deployment of the 101st Airborne Division is facilitated by either C-130, C-141, or C-5A fixed-wing aircraft or a combination of these. Training for deployment is usually conducted in small units; however, during special training exercises, the entire Division or major portions of it are airlifted. A deployment exercise of the entire Division is rare; however, smaller divisional units continuously schedule USAF aircraft for strategic load training at Campbell Army Airfield.

Helicopter activities at Fort Campbell include a training program to develop proficiency of individual pilot and helicopter crew, helicopter section and platoon operations, and activities supporting infantry brigades. Helicopter training operations include tactical terrain flight (low-level), troop insertions and extractions, reconnaissance flight training, standardization flights, non-standardization and emergency flight training, touch-and-go operations, hovering, sling load, autorotation, rapelling operations, helicopter gunnery training, helicopter test flights, cross-country flights (Nashville, Hopkinsville, etc.), and Nap-of-the-Earth (NOE) training.

Two impact areas receive artillery fire from various firing points on the installation. Artillery used includes 155-mm howitzers, 105-mm howitzers, 81-mm mortars, 90-mm recoiless rifles, 106-mm recoiless rifles, and 2.75-in. rockets, as well as periodic small and large TNT explosions. During an average day, there are about 180 day firings and 10 night firings. Altogether, Fort Campbell has 47 firing ranges, seven of which have been deactivated because of resurvey, maintenance, or new construction.

Results of Visit

Fort Campbell personnel felt that compliance with environmental regulations had not significantly affected either their units' training or any other training conducted at the installation. However, one problem may be affecting the units' equipment and personnel readiness. Air pollution constraints prevent heating of older motor maintenance buildings which have coal-fired, 1942-era heating plants. This involves the divisional direct support maintenance and medical battalion and other vehicle maintenance areas. Thus, in cold or adverse weather, vital maintenance activities either do not get done or are delayed and therefore impact equipment readiness. Personnel readiness is also affected because personnel dislike their working conditions and do not reenlist.

Fort Stewart, GA

Background of Installation

Fort Stewart contains 279,568 acres and is located in southeast Georgia. The main cantonment area is located in the lower southern portion of the installation, adjacent to the city of Hinesville. Savannah, GA, is about 41 miles northeast of the cantonment area and 10 miles from the eastern reservation boundary. Other towns within a 35-mile radius include Glenville, Claxton, Pembroke, and Richmond Hill.

Fort Stewart was activated in June 1940 as an Antiaircraft (AAA) Center under the name of Camp Stewart to prepare artillery troops for overseas deployment. Camp Stewart was inactivated in September 1945 and was reopened in August 1950 during the Korean War. In 1953, the Army decided to conduct armor training concurrently with antiaircraft artillery training. It was designated as a permanent Army installation in 1956, due to its new importance in tank training. In 1966, an element of the U.S. Army Aviation School was relocated to Fort Stewart, and the installation, in conjunction with Hunter Army Airfield, became the United States Army Flight Training Center with helicopter and fixed-wing training programs. With the de-emphasis of aviation training in 1972, the Department of the Army redesignated the installation to United States Army Garrison, Fort Stewart, effective 1 July 1972. The 24th Infantry Division was permanently stationed there in 1977. This Division has about 12,000 troops and 2000 vehicles.

Fort Stewart's mission is to provide ranges and facilities for resident active Army units. These include a range battalion and a construction battalion, which are stationed at Fort Stewart, non-resident active Army units, and about 20,000 to 26,000 National Guard and USAR personnel who annually train there.

The primary objectives of the current mission are to:

1. Provide for efficient and economical operation, administration, service support, and supply of all individuals, units, and activities, except for those functions and command responsibilities specifically retained by higher headquarters

2. Train, equip, assure the readiness of, and deploy as necessary those combat forces and support elements assigned

3. Administer, service, supply, and train officer and enlisted personnel assigned

4. Support USAR and ARNG training as directed.

The 24th Infantry Division also provides tactical training for the combat mission of destroying enemy armed forces and for controlling land areas, including populations and resources. For this purpose, the Division:

1. Conducts sustained combat operations

2. Operates in difficult weather and terrain

3. Operates as a part of a joint airborne force

4. Operates with less combat service support than other Divisions

5. Conducts airmobile operations

6. Organizes and conducts an area defense

7. Provides organic air defense against low-altitude hostile aircraft.

Divisional activations include the Division Headquarters and Headquarters Company, Military Police Company, Aviation Battalion, ADA Battalion, Signal Battalion, Engineer Battalion, Air Cavalry Squadron, Division Artillery, and Division Support Command.

Results of Visit

Fort Stewart has not lost any training/combat readiness capabilities because of compliance with environmental regulations; however, there have been several problems, primarily because of the Endangered Species Act, which could affect training in the future. Fort Stewart's endangered species include the Red Cockaded Woodpecker and the Eastern Indigo Snake; in addition, the alligator is a threatened species. Regulations protecting the Red Cockaded Woodpecker have been the primary obstacle to any training changes.

These regulations might potentially affect the installation's forestry programs as much or even more than training. Fort Stewart has the highest income from forestry of any installation. Revenue from lumber sales is about $3 million per year. Lumber from the 270,000 to 380,000 acres on Fort Stewart is an important backup for local paper companies.

The CALFEX (Combined Arms Live Fire Exercise) was delayed by a jeopardy Biological Opinion given by the Fish and Wildlife Service because of the Red Cockaded Woodpecker. Fort Stewart felt that CALFEX would produce no significant impact, but the Fish and Wildlife Service disagreed. They suggested a 2-year study, which would cost the Army $100,000. Eventually, the Department of Natural Resources helped by moving a colony of the woodpeckers to St. Catherine's Island, owned by Noble Corporation.

The woodpeckers often nest in older trees. Therefore, the Fish and Wildlife Service has requested that Fort Stewart use a 100-year rotation plan, in which trees would not be cut until they were more than 100 years old. This would virtually make the entire installation a Red Cockaded Woodpecker habitat. The Chief of Buildings and Grounds feels that the procedures and degree of disruption required for compliance would not be conducive to training. But unless the installation coordinated with the Fish and Wildlife Service, the whole CALFEX project could be stopped indefinitely. Eventually, a non-jeopardy opinion was given in return for a 5000-acre Red Cockaded Woodpecker sanctuary. Eleven months elapsed between the request for a consultation and the non-jeopardy finding. During this time, work on the CALFEX was stopped, wasting both time and money. If the 100-year rotation management plan is used, training at Fort Stewart could be affected if the entire area becomes inhabited by the woodpeckers protected by the regulation.

The Chief of Training feels that although there are no insurmountable problems at Fort Stewart (possibly because the installation is so large), tighter scheduling and reduced training programs are required due to environmental regulations.

5 CONCLUSIONS

This research investigated possible adverse effects on the combat readiness of military personnel as a result of environmental restrictions on training. Based on information taken from a survey and from visits to two installations, environmental regulations appear to have some adverse effects on Army unit training, and subsequently on combat readiness. Most of the conflicts which have occurred either have been or

could have been resolved by including environmental personnel early in the planning of Army unit training. For example, installations should coordinate with environmental personnel regarding their needs for large areas of land for practicing use of new weapons systems and with officials of nearby populated areas about excessive noise during training. A few conflicts with environmental regulations are unavoidable; insuring that combat readiness is not adversely affected may require national security exemptions to preserve the effectiveness of training programs.

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APPENDIX:
INSTALLATION SURVEY

Name _____
Office _____
Installation _____
Phone # _____

1. What training and/or readiness capabilities have been lost or are about to be lost at your installation (or at other sites at which your unit trains)? Why has each significant loss occurred, or why might it occur?

2. Do you believe that compliance with environmental regulations has significantly affected your unit's training or the training conducted at your installation? Have you observed any effects sufficiently serious as to potentially affect combat readiness?

3. For each adverse effect with which you are familiar, please provide the following:

(a) A brief description of the problem

(b) Particlar law(s) involved

(c) Type(s) of training involved (include specific ARTEP where possible)

(d) How serious was the effect?

(e) Could this problem have been avoided? How? When? By whom?

(f) Did factors other than environmental regulations contribute to the problem? How?

4. What characteristics of your installation or training area led to the most severe environmental restrictions on training (e.g., endangered species, archaeological sites, wetlands)?

5. Are you aware of any future Army training requirements, materiel, or weapons development requirements which might be adversely affected by environmental regulations? How do you think these potential problems could best be avoided?

The following Federal laws are those with which this survey is especially concerned. If other environmental laws or regulations have affected training at your installation or other training site, please feel free to discuss their effects.

1. Archaeological and Historic Preservation Act (Reservoir Salvage Act)
2. Clean Air Act
3. Federal Water Pollution Control Act (Clean Water Act)
4. Coastal Zone Management Act of 1972
5. Endangered Species Act
6. Estuary Protection Act
7. Fish and Wildlife Coordination Act
8. Marine Protection, Research, and Sanctuaries Act of 1972
9. National Environmental Policy Act
10. National Historic Preservation Act
11. The Rivers and Harbors Act of 1899
12. Wild and Scenic Rivers Act
13. Resource Conservation and Recovery Act of 1976
14. Safe Drinking Water Act
15. Noise Control Act of 1972
16. Federal Insecticide, Fungicide and Rodenticide Act