Volume II - Impact Analysis Matrices and
EIS Review Comments and Responses

ENVIRONMENTAL IMPACT STATEMENT

Relocation of U.S. Army Chemical School
and U.S. Army Military Police School
to
Fort Leonard Wood, Missouri

March 1997

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ENVIRONMENTAL IMPACT STATEMENT ORGANIZATION

This Environmental Impact Statement (EIS) describes the anticipated impacts of relocating the U.S. Army Chemical School and U.S. Army Military Police School to Fort Leonard Wood. It identifies and describes the proposed actions, alternatives to these actions, and related environmental effects as required by the President's Council on Environmental Quality regulations, the National Environmental Policy Act and Army Regulation 200-2. The main body of the EIS consists of Volumes I and II. In addition, Volumes III and IV have been prepared as supporting documents, with limited distribution. All four volumes of the EIS are available for review at listed information repositories or upon request. A complete Table of Contents for each volume has been included in Volume I. A summary of the contents of Volumes I - IV is provided below.

VOLUME I

EXECUTIVE SUMMARY provides an overview of the information presented in the EIS but is not intended to replace the detailed evaluation presented in the body of the document.

Section 1 **PURPOSE, NEED AND SCOPE** describes the base closure and realignment decision-making process, why the EIS is being prepared, the scope of the document, and the EIS public involvement process.

Section 2 **OVERVIEW OF THE PROPOSED ACTION** describes relevant background information associated with the proposed action and an overview of the proposed action analyzed in the EIS.

Section 3 **DESCRIPTION OF ALTERNATIVES - INCLUDING THE PROPOSED ACTION** provides a discussion of how the EIS study alternatives were developed, and a description of alternatives to be evaluated in the EIS (including a detailed discussion of the Army's proposed implementation action).

Section 4 **AFFECTED ENVIRONMENT** describes the existing physical, social and economic characteristics of Fort Leonard Wood and its environs.

Section 5 **ENVIRONMENTAL CONSEQUENCES** provides an analysis of the environmental and socioeconomic effects of the proposed action and alternatives.

Section 6 **LIST OF PREPARERS** identifies the professional and technical staff responsible for the preparation of the EIS, and provides a summary of their qualifications.

Section 7 **DISTRIBUTION LIST** identifies public officials, public agencies, public interest groups, organizations, and individuals that received copies of the EIS.

Section 8 **INDEX** provides an alphabetical list of topics addressed in the EIS.

Section 9 **REFERENCES** provides a listing of materials used in the development of the EIS.

Section 10 **PERSONS CONSULTED** identifies public agencies, public interest groups, organizations, and individuals that were consulted during the development of the EIS.

VOLUME II

IMPACT ANALYSIS MATRICES have been included to graphically illustrate the anticipated impacts of implementing the proposed BRAC action at FLW. These matrices are intended to be used in association with the narrative and tabular data provided in Section 5, *Environmental Consequences*, of Volume I. **EIS REVIEW COMMENTS AND RESPONSES** for all verbal and written comments received during the comment period have also been included in Volume II.

VOLUME III

TECHNICAL APPENDICES includes materials that support the development of the EIS. Volume III is a supporting document, with limited distribution, which is available for review at listed public repositories (see subsection 1.4.6.3) or upon request.

VOLUME IV

IDENTIFICATION AND SCREENING OF ALTERNATIVES TO ACCOMPLISH TRAINING GOALS AT FORT LEONARD WOOD documents the process used to formulate the training method alternatives that are analyzed in the EIS. Volume IV is a supporting document, with limited distribution, which is available for review at listed public repositories or upon request.

This document is printed on recycled and recyclable paper.



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Part 1:
Impact Analysis Matrices

Part 1: Impact Analysis Matrices

II.1 INTRODUCTION

This volume includes a series of impact matrices that provide a graphic summary of the relative impacts associated with each of the three training alternatives, and each of the three land use and facility plan alternatives discussed in Volume I, Section 5. The reader is encouraged to refer to these matrices in association with the corresponding Volume I, Section 5 narrative and tabular presentations to help understand the type and magnitude of impacts, and the relative differences in impacts among the alternatives that were analyzed.

In addition, all review comments on the DEIS and responses to them are included in this volume. Discussion of the review comments and responses begins on page 57 of this volume.

II.2 IMPACT EVALUATION CATEGORIES

Fifteen natural, cultural, sociological and economic resource categories, and an operational efficiency category were established to provide a framework for the identification of the impacts of alternative implementation actions. The categories were developed based on a review of installation resources, related resource protection laws and regulations, and comments received from the public and resource agencies during the EIS scoping process. The resource categories include:

- Land Use and Training Areas;
- Air Quality and Climate;
- Noise;
- Water Resources (including Surface Water, Floodplains and Hydrogeology/Groundwater);
- Geology and Soils;

- Infrastructure;
- Hazardous and Toxic Materials;
- Munitions;
- Permits and Regulatory Authority;
- Biological Resources (including Federal Threatened & Endangered (T & E) Species, Other Protected Species, Wetlands, Aquatic Resources and Terrestrial Resources);
- Cultural Resources;
- Sociological Environment;
- Economic Development;
- Quality of Life (including Human Health and Safety);
- Installation Agreements; and
- Operational Efficiency.

II.3 IMPACT MATRICES INCLUDED

Impact matrices presented herein have been limited to analyses performed under the Step 1 (training alternatives) and Step 2 (land use and facility plan (LU & FP) alternatives) analyses. Matrices were developed for these elements in recognition of the length and complexity of the related narrative evaluations. Table II.1 provides an index to the matrices provided in this volume.

Table II.1
Index of Impact Matrices Included in Volume II

	Impact Matrix No.	Impact Matrix Title	Volume II Impact Matrix Page No.	Volume I Narrative/ Tabular Section No.
Step 1 - Training Mission Impact Analysis				
	1 *	Training Alternative Impacts (Based on training at locations specified by the Army's Proposed LU & FP - Combined Headquarters and Instruction)	II-5	5.2.2
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Notes:
LU & FP = Land Use and Facility Plan

* The training alternative impact matrices (Nos. 1 through 3) only evaluate the impacts of implementing training methods as described under the Relocate Current Practice (RCP) Alternative, the Optimum Training Method (OPTM) (Army's Proposed Action) Alternative, and the Environmentally Preferred Training Method (EPTM) Alternative. However, in order to evaluate the impacts of certain alternative training methods, it is necessary to consider the location where training will occur. Therefore, each of the training alternatives were evaluated based on consideration of locations specified in each of the land use and facility plans to identify differences that may occur as a result of training locations.

** Impact matrices 4 through 6 summarize the impacts associated with the development of facilities required to support the relocation of the Military Police School and the Chemical School to FLW.

Source: Harland Bartholomew & Associates, Inc.

II.4 DEFINITION OF KEY TERMS AND ASSOCIATED SYMBOLS

The following paragraphs define key terms and symbols used in the matrices of this volume.

II.4.1 Direct Versus Indirect Impacts. The terms impact and effect are synonymous as used in these matrices and the EIS. Impacts may be determined to be beneficial or adverse, and may apply to the full range of natural, aesthetic, historic, cultural and economic resources of the installation and its surroundings. Definitions of direct and indirect impacts as used in these matrices and the Environmental Impact Statement (EIS) follow:

- **Direct Impact.** *A direct impact is caused by the proposed action, and occurs at the same time and place.*

- **Indirect Impact.** *An indirect impact is caused by the proposed action and is later in time or farther removed in distance, but is still reasonably foreseeable.*

II.4.2 Short-Term Versus Long-Term Impacts. In addition to indicating whether impacts are direct or indirect, the impact matrices also distinguish between short- and long-term impacts. In this context, short- and long-term do not refer to any rigid time period and are determined on a case-by-case basis in terms of the environmentally significant consequences of the proposed action. Where both short- and long-term impacts are expected to occur, they are discussed in the corresponding text narrative, but only the long-term symbol is shown on the evaluation impact matrices.

II.4.3 Impact Matrix Symbols. Table II.2 shows the symbols used to represent potential impacts identified in each of the matrices included in this volume.

Table II.2 Symbols Used in the Impact Summary Matrices

Long Term	L
Short Term	S
No Impact	O
Adverse Impact	⊙
Significant Adverse Impact	●
Beneficial Impact	✦
Permit Required (New)	Req(N)
Permit Required (Revised)	Req(R)

Impact Matrix 1
Training Alternative Impacts (Based on training at locations specified by the Army's Proposed LU & FP - Combined Headquarters and Instruction)

Impact Matrix 1

Training Alternative Impacts (Based on training locations specified by the Army's Proposed LU & FP - Combined Headquarters and Instruction)

	Alternative				Resource Categories																								
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
1. BATTLEFIELD PROCEDURES																													
1.1 Call-For Fire Support																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
Classroom with 35mm slides				I	O	O	O	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
1.2 Maneuver Operations																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	L ⊙		O	L ⊙	O	O	O	O	L ●		O	O	L ⊙	O	O	O	L +	L ⊙	O	O	L O
Classroom, simulation and field maneuver training				I	O	O	O	L ⊙		O	O	O	O	O	Req(R)	L ●		L ⊙	L ⊙	L ⊙	L ⊙	O	O	L +	O	O	O	L +
1.3 Mines and Obstacles																													
RCP	✓			D	O	L ⊙	L ⊙	O		O	L ●	O	L ●	O	Req(R)	L ●		O	O	O	L ⊙	O	O	L +	O	O	O	L +
Expedient Mines (900 gallons/event)				I	O	L ⊙	O	L ⊙		L ●	O	O	L ⊙	O	Req(R)	L ●		L ⊙	O	L ⊙	L ⊙	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	O	L ⊙	L ⊙	O		O	L ●	O	L ⊙	O	Req(R)	L ●		O	O	O	L ⊙	O	O	L +	O	O	O	L +
Reduced Charge Expedient Mines (550 gallons/event) in a controlled area				I	O	L ⊙	O	L ⊙		L ●	O	O	L ⊙	O	Req(R)	L ●		L ⊙	O	L ⊙	L ⊙	O	O	L +	O	O	O	L +
1.4 NBC Warning and Reporting																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	L ⊙	O		O	O	O	O	O	O	L ●		O	O	O	O	O	O	L +	O	O	O	L +
Classroom, simulators and field maneuver training				I	O	O	O	O		O	O	O	O	O	O	L ●		L ⊙	O	O	O	O	O	L +	O	O	O	L +
1.5 Night-Time Squad Engagement																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	L ⊙	L ⊙	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
Classroom, simulators and live-fire range training				I	O	O	O	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
1.6 Unarmed Self-Defense																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
Classroom, Training on padded mats, and exterior training.				I	O	O	O	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
1.7 Urban Terrain																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	L ⊙	O		O	O	O	O	O	O	L ●		O	O	O	O	O	O	L +	O	O	O	L +
Classroom and designed training area				I	O	O	O	O		O	O	O	O	O	O	L ●		O	O	O	O	O	O	L +	O	O	O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 1

Training Alternative Impacts (Based on training locations specified by the Army's Proposed LU & FP - Combined Headquarters and Instruction)

	Alternative				Resource Categories																								
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources • Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
1.8 Warfighting & Tactical Operations																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	L ⊙	O		O	L ⊙	O	O	O	O	O	O	O	O	L ⊙	O	O	L +	O		O	L +
Classroom, simulators, and use of live-fire ranges				I	O	O	O	L ⊙		O	O	O	O	O	Req(R)	O	L ⊙	O	L ⊙	L ⊙	O	O	L +	O		O	L +
2. BIOLOGICAL AGENT DETECTION																													
2.1 BIDS Employment & Operations																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	L ⊙	L ⊙	L ⊙		O	L ⊙	O	O	O	O	O	O	L ⊙	L ⊙	L ⊙	O	O	L +	O		O	L +
Classroom, simulators and field maneuver training				I	O	L ⊙	O	L ⊙		O	O	O	O	O	Req(R)	O	L ⊙	L ⊙	L ⊙	L ⊙	O	O	L +	O		O	L +
2.2 BIDS Maintenance																													
RCP	✓			D	L +	O	L ⊙	O		O	O	O	L ⊙	O	O	O	O	O	O	O	O	O	L +	O		O	L +
Classroom, exterior and training in a maintenance bay				I	L +	O	O	L ⊙		O	L ⊙	O	L ⊙	O	Req(R)	O	O	O	L ⊙	O	O	O	L +	O		O	L +
OPTM, and EPTM		✓	✓	D	L +	O	⊙	O		O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O		O	L +
Classroom, exterior (in a controlled area) and training in a maintenance bay				I	L +	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O		O	L +
2.3 LR-BSDS Battlefield Employment																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	L ⊙	O		O	O	O	O	O	O	O	O	O	O	O	O	O	L O	O		O	L +
Classroom and exterior training				I	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O		O	L +
2.4 LR-BSDS Maintenance																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O		O	L +
Classroom and exterior training				I	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O		O	L +
3. NBC RECONNAISSANCE OPERATIONS																													
3.1 FOX Battlefield Employment & Operation																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	L ⊙	L ⊙	L ⊙		O	L ⊙	O	L ⊙	O	O	O	O	L ⊙	L ⊙	L ⊙	O	O	L +	O		O	L +
Classroom, simulation and field maneuver training				I	O	L ⊙	O	L ⊙		O	O	O	L ⊙	O	Req(R)	O	L ⊙	L ⊙	L ⊙	L ⊙	O	O	L +	O		O	L +
3.2 FOX Maintenance																													
RCP	✓			D	L +	O	L ⊙	O		O	O	O	L ⊙	O	O	O	O	O	O	O	O	O	L +	O		O	L +
Classroom, exterior and training in a maintenance bay				I	L +	O	O	L ⊙		O	L ⊙	O	L ⊙	O	Req(R)	O	O	O	L ⊙	O	O	O	L +	O		O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 1

Training Alternative Impacts (Based on training locations specified by the Army's Proposed LU & FP - Combined Headquarters and Instruction)

	Alternative				Resource Categories																								
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
OPTM, and EPTM		✓	✓	D	L +	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom, exterior (controlled area) and training in a maintenance bay				I	L +	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
4. GENERAL MILITARY TRAINING																													
4.1 General Military Training																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom training with training aids				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
4.2 GMT, Field Training																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction and proficiency demonstration in exterior training areas				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
4.3 GMT, NBC Personal Protective Equipment																													
RCP, and OPTM	✓	✓		D	O	O	L ⊙	O	O	O	O	O	O	O	O	L ●	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by training at a gas chamber (filled with CS (Tear) gas) and in exterior training areas				I	O	O	O	O	O	O	O	O	O	O	O	L ●	O	O	O	O	O	O	O	L +	O	O	O	L +
EPTM			✓	D	O	O	L ⊙	O	O	O	O	O	O	O	O	L ●	O	O	O	O	O	O	O	L +	O	O	O	L +
Exterior instruction followed by training at a gas chamber (filled with CS (Tear) gas)				I	O	O	O	O	O	O	O	O	O	O	O	L ●	O	O	O	O	O	O	O	L +	O	O	O	L +
4.4 Signals & Other Non-verbal Communications																													
RCP, and OPTM	✓	✓		D	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by student exercises				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
EPTM			✓	D	O	O	O	O	O	O	O	O	O	O	O	L ●	O	O	O	O	O	O	O	L +	O	O	O	L +
Exterior instruction followed by student exercises				I	O	O	O	O	O	O	O	O	O	O	O	L ●	O	O	O	O	O	O	O	L +	O	O	O	L +

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Impact Matrix 1

Training Alternative Impacts (Based on training locations specified by the Army's Proposed LU & FP - Combined Headquarters and Instruction)

	Alternative				Resource Categories																							
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
4.5 Radio Communications including secure communications																												
RCP, and OPTM	✓	✓		D	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom and communications lab instruction followed by student exercises				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
EPTM			✓	D	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Exterior instruction followed by student exercises				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
4.6 Computer Operations																												
RCP	✓			D	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction and student exercises in a computer lab				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction and student exercises in a computer lab with the computer on a network				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
4.7 Physical Fitness and Total Fitness																												
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by physical skill development				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
5. MILITARY POLICE OPERATIONS																												
5.1 Basic MP Functions																												
RCP, OPTM, and EPTM	✓	✓	✓	D	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by student exercises in mock facilities				I	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
5.2 Advanced Law Enforcement																												
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by student exercises in mock facilities				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +

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Training Alternative Impacts (Based on training locations specified by the Army's Proposed LU & FP - Combined Headquarters and Instruction)

	Alternative				Resource Categories																						
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
6. NBC PROCEDURES																											
6.1 NBC Procedures																											
RCP	✓			D	O	L ⊙	L ⊙	O	O	O	O	L ⊙	O	Req(N)	L ●	O	O	O	O	O	O	L +	L ⊙	O	O	L +
Classroom instruction followed by lab training and exterior training with open and sealed radiological isotopes				I	O	L ⊙	O	O	O	O	O	L ⊙	O	Req(N)	L ●	L ⊙	O	O	O	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	O	L ⊙	L ⊙	O	O	O	O	L ⊙	O	Req(N)	L ●	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by lab training with open radiological isotopes and exterior training with materials that simulate the effects of radiological isotopes				I	O	L ⊙	O	O	O	O	O	L ⊙	O	Req(N)	L ●	L ⊙	O	O	O	O	O	L +	O	O	O	L +
6.2 NBC Equipment																											
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	L ⊙	O	O	L ⊙	O	O	O	O	O	L ●	O	O	O	L ⊙	O	O	L +	O	O	O	L +
Classroom instruction followed by exterior training				I	O	O	O	L ⊙	O	O	O	O	O	Req(R)	L ●	L ⊙	L ⊙	L ⊙	L ⊙	O	O	L +	O	O	O	L +
6.3 NBC Decon Advanced (Toxic Agent)																											
RCP	✓			D	O	L ⊙	O	O	O	O	O	L ⊙	O	Req(R)	O	O	O	O	O	O	O	L +	O	S ⊙	O	L +
Classroom instruction followed by exterior training and training in a controlled interior environment with toxic agents, wastes disposed of on-site				I	S ⊙	L ⊙	O	O	O	O	O	L ⊙	L ⊙	Req(R)	O	O	O	O	O	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	O	O	O	O	O	O	O	L ⊙	O	Req(N)	O	O	O	O	O	O	O	L +	O	S ⊙	O	L +
Classroom instruction followed by exterior training and training in a controlled interior environment with toxic agents, wastes disposed of off-site				I	S ⊙	O	O	O	O	O	O	L ⊙	L ⊙	Req(N)	O	O	O	O	O	O	O	L +	O	O	O	L +

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Impact Matrix 1

Training Alternative Impacts (Based on training locations specified by the Army's Proposed LU & FP - Combined Headquarters and Instruction)

	Alternative				Resource Categories																									
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
6.4 NBC Survival Recovery																														
RCP	✓			D	O	L ⊙	L ⊙	O	O	O	O	O	L ⊙	O	Req(N)	L ●	O	O	O	O	O	O	L +	L ⊙	O	O	L +
Classroom instruction followed by lab training and exterior training with open and sealed radiological isotopes				I	O	L ⊙	O	O	O	O	O	O	L ⊙	O	Req(N)	L ●	L ⊙	O	O	O	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	O	L ⊙	L ⊙	O	O	O	O	O	L ⊙	O	Req(N)	L ●	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by lab training with open and sealed radiological isotopes and exterior training with materials that simulate the effects of radiological isotopes				I	O	L ⊙	O	O	O	O	O	O	L ⊙	O	Req(N)	L ●	L ⊙	O	O	O	O	O	L +	O	O	O	L +
7. OBSCURANT PROCEDURES																														
7.1 Obscurant, Employment Principles																														
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction with training aids				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
7.2 Obscurant, Employment Operations, Basic (Static)																														
RCP	✓			D	O	L ●	L ⊙	O	O	O	O	O	O	O	Req(R)	L ●	L ⊙	O	O	O	L ⊙	O	S ⊙	L +	L ⊙	O	O	L +
Classroom instruction followed by the use of smoke generators (including the release of approximately 20,000 gallons of fog-oil per year)				I	O	L ●	O	L ⊙	O	L ⊙	O	O	L ⊙	O	Req(R)	L ●	L ⊙	L ⊙	L O	L ⊙	O	O	L +	O	O	O	L +
OPTM		✓		D	O	L ●	L ⊙	O	O	O	O	O	O	O	Req(R)	L ●	L ⊙	O	O	L ⊙	O	S ⊙	L +	L ⊙	O	O	L +
Classroom instruction followed by the use of smoke generators (including the release of approximately 8,500 gallons of fog-oil per year)				I	O	L ●	O	L ⊙	O	O	O	O	L ⊙	O	Req(R)	L ●	L ⊙	L ⊙	O	L ⊙	O	O	L +	O	O	O	L +

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Impact Matrix 1

Training Alternative Impacts (Based on training locations specified by the Army's Proposed LU & FP - Combined Headquarters and Instruction)

	Alternative				Resource Categories																										
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
EPTM			✓	D	O	L ⊙	L ⊙		O	O	O	O	O	O	Req(R)	L ●		O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by the use of smoke generators with water and recycling manifolds (including the release of approximately 1,000 gallons per year)				I	O	L ⊙	O		O	O	O	O	O	O	Req(R)	L ●		O	O	O	O	O	O	L +	O	O	O	L +
7.3 Obscurant, Employment Operations, Mobile																												
RCP	✓			D	O	L ●	L ⊙	L ⊙		O	L ⊙	O	O	O	Req(R)	L ●	L ⊙		L ⊙	L ⊙	O	L ⊙	O	S ⊙	L +	L ⊙	O	O	L +
Exterior instruction followed by the use of smoke generators (release of approximately 41,500 gallons per year)				I	O	L ●	O	L ⊙		O	O	O	L ⊙	O	Req(R)	L ●	L ⊙		L ⊙	L ⊙	O	L ⊙	O	O	L +	O	O	O	L +
OPTM and EPTM		✓	✓	D	O	L ●	L ⊙	L ⊙		O	L ⊙	O	O	O	Req(R)	L ●	L ⊙		L ⊙	L ⊙	O	L ⊙	O	S ⊙	L +	L ⊙	O	O	L +
Exterior instruction followed by the use of smoke generators (release of approximately 20,000 gallons per year)				I	O	L ●	O	L ⊙		O	O	O	L ⊙	O	Req(R)	L ●	L ⊙		L ⊙	L ⊙	O	L ⊙	O	O	L +	O	O	O	L +
7.4 Obscurant, Employment Operations (Field Training)																												
RCP	✓			D	O	L ●	L ⊙	L ⊙		O	L ⊙	O	O	O	Req(R)	L ●	L ⊙		L ⊙	L ⊙	O	L ⊙	O	S ⊙	L +	L ⊙	O	O	L +
Classroom and exterior training followed by the use of smoke generators (release of approximately 64,000 gallons of fog-oil per year)				I	O	L ●	O	L ⊙		O	O	O	L ⊙	O	Req(R)	L ●	L ⊙		L ⊙	L ⊙	O	L ⊙	O	O	L +	O	O	O	L +
OPTM		✓		D	O	L ●	L ⊙	L ⊙		O	L ⊙	O	O	O	Req(R)	L ●	L ⊙		L ⊙	L ⊙	O	L ⊙	O	S ⊙	L +	L ⊙	O	O	L +
Classroom and exterior training followed by the use of smoke generators (release of approximately 56,000 gallons of fog-oil per year)				I	O	L ●	O	L ⊙		O	O	O	L ⊙	O	Req(R)	L ●	L ⊙		L ⊙	L ⊙	O	L ⊙	O	O	L +	O	O	O	L +

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	Alternative				Resource Categories																							
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
EPTM			✓	D	O	L ●	L ⊙	L ⊙		O	L ⊙	O		O	Req(R)	L ●	L ⊙	L ⊙		O	L ⊙	O	S ⊙	L +	L ⊙	O	O	L +
Classroom and exterior training followed by the use of smoke generators (release of approximately 28,500 gallons of fog-oil per year)				I	O	L ●		O	L ⊙	O	O	O	L ⊙	O	Req(R)	L ●	L ⊙	L ⊙		O	L ⊙	O	O	L +	O	O	O	L +
7.5 Obscurant, Generator Maintenance																												
RCP	✓			D	O	O	L ⊙	O		O	O	O	L ⊙	O	O	O	O		O	O	O	O	O	L +	O	O	O	L +
Classroom, exterior and training in a maintenance bay				I	O	O	O	L ⊙		O	O	O	L ⊙	O	Req(R)	O	O		O	L ⊙	O	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	O	O	L ⊙	O		O	O	O	O	O	O	O	O		O	O	O	O	O	L +	O		O	L +
Classroom, exterior (in a controlled area) and training in a maintenance bay				I	O	O	O	O		O	O	O	O	O	O	O	O		O	O	O	O	O	L +	O	O	O	L +
7.6 Obscurant, Storage Operations																												
RCP	✓			D	O	O	O	O		O	O	O	O	O	Req(R)	O	O		O	O	O	O	O	L +	O	O	O	L +
Decentralized uncovered storage				I	O	O	O	L ⊙		O	O	O	L ⊙	O	Req(R)	O	O		O	L ⊙	O	O	O	L +	O	O	O	L +
OPTM		✓		D	O	O	O	O		O	O	O	O	O	O	O	O		O	O	O	O	O	L +	O	O	O	L +
Decentralized covered storage				I	O	O	O	S ⊙		O	O	O	L ⊙	O	O	O	O		O	S ⊙	O	O	O	L +	O	O	O	L +
EPTM			✓	D	O	O	O	O		O	O	O	O	O	O	O	O		O	O	O	O	O	L +	O	O	O	L +
Centralized covered storage				I	O	O	O	S ⊙		O	O	O	L ⊙	O	O	O	O		O	S ⊙	O	O	O	L +	O	O	O	L +
8. RADIATION SAFETY																												
8.1 Radiation Safety																												
RCP, and OPTM	✓	✓		D	O	O	O	O		O	O	O	L ⊙	O	Req(N)	O	O		O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by lab training with open and sealed radiological isotopes and exterior training with sealed radiological isotopes				I	O	O	O	O		O	O	O	L ⊙	O	Req(N)	O	L ⊙		O	O	O	O	O	L +	O	O	O	L +

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	Alternative				Resource Categories																										
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
EPTM			✓	D	O	O	O	O	O	O	O	O	O	O	Req(N)	O		O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by lab training with open and sealed radiological isotopes and exterior training with materials that simulate the effects of radiological isotopes				I	O	O	O	O	O	O	O	O	L ⊙	O	Req(N)	O	L	⊙	O	O	O	O	O	O	L +	O	O	O	L +
8.2 Radiation, Test and Operations Equipment Storage																															
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Centralized storage with satellite storage locations				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
9. RESEARCH SUPPORT																															
9.1 Research support																															
RCP	✓			D	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Provide new Chemical School and Military Police School Libraries				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Collocate with current Fort Leonard Wood assets				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
9.2 Specialized/Classified and Museum																															
RCP	✓			D	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	L +	O	O	L +
Provided dedicated specialized material storage at the school library and individual Museums for the Chemical and Military Police schools				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	L +	O	O	L +
Provided dedicated specialized material storage and collocate Museums with the current Fort Leonard Wood assets				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +

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	Alternative				Resource Categories																							
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
10. SMALL ARMS PROCEDURES																												
10.1 Weapons Training																												
RCP and OPTM	✓	✓		D	O	L ⊙	L ⊙	O	O	O	O	O	L ⊙	O	O	O	L ⊙	O	O	L ⊙	O	O	L +	O	O	O	L +
Classroom instruction followed by simulator and live-fire weapons training with simulated and high-explosive MK-19 rounds; and other high-explosive rounds				I	O	O	L ⊙	L ⊙	O	O	O	O	O	O	Req(N)	O	L ⊙	O	L ⊙	L ⊙	O	O	L +	O	O	O	L +
EPTM			✓	D	O	L ⊙	L ⊙	O	O	O	O	O	O	L ⊙	O	O	O	O	O	L ⊙	O	O	L +	O	O	O	L +
Classroom instruction followed by simulator and live-fire weapons training with simulated MK-19 rounds; and other high-explosive rounds				I	O	O	L ⊙	L ⊙	O	O	O	O	O	O	Req(N)	O	L ⊙	O	L ⊙	L ⊙	O	O	L +	O	O	O	L +
10.2 Weapons Training, Pistol																												
RCP, OPTM, and EPTM	✓	✓	✓	D	O	L ⊙	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by simulator and live-fire weapons training				I	O	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
10.3 Weapons Storage																												
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by student exercises in mock facilities				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
11. VEHICLE OPERATIONS																												
11.1 Vehicle Operations, Driver Qualification																												
RCP	✓			D	O	L ⊙	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by driving practice				I	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	O	L ⊙	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by driving practice augmented by computer simulation				I	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 1

Training Alternative Impacts (Based on training locations specified by the Army's Proposed LU & FP - Combined Headquarters and Instruction)

	Alternative				Resource Categories																						
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
11.2 Evasive Driving																											
RCP, and OPTM	✓	✓		D	O	L ⊙	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by driving practice				I	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
EPTM			✓	D	O	L ⊙	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Exterior instruction followed by driving practice				I	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
11.3 Vehicle Maintenance																											
RCP	✓			D	O	O	L ⊙	O	O	O	O	O	L ⊙	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom, exterior and training in a maintenance bay				I	O	O	L ⊙	L ⊙	O	O	L ⊙	O	L ⊙	O	Req(R)	O	O	O	L ⊙	O	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	O	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom, exterior (in a controlled area) and training in a maintenance bay				I	O	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 2
Training Alternative Impacts (Based on training at locations specified by Alternative 1 LU & FP - Combined Headquarters)

Impact Matrix 2

Training Alternative Impacts (Based on training locations specified by Alternative 1 LU & FP (Combined Headquarters)

	Alternative				Resource Categories																										
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
1. BATTLEFIELD PROCEDURES																															
1.1 Call-For Fire Support																															
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	O		O	O		O		O	O		O		O		O		L +		O		O		L +
Classroom with 35mm slides				I	O	O	O	O		O	O		O		O	O		O		O		O		L +		O		O		L +
1.2 Maneuver Operations																															
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	L	⊙	O	L	⊙	O	O	O	O	L	●	O	O	L	⊙	O	O	O	L +	L	⊙	O	O	L +
Classroom, simulation and field maneuver training				I	O	O	O	L	⊙	O	O		O	O	O	Req(R)	L	●	L	⊙	L	⊙	L	⊙	L	⊙	O	O	O	L +	O	O	O	L +
1.3 Mines and Obstacles																															
RCP	✓			D	O	L	⊙	L	⊙	O	O	L	●	O	L	●	O	Req(R)	L	●	O	O	O	L	⊙	O	O	L +	O	O	O	L +
Expedient Mines (900 gallons/event)				I	O	L	⊙	O	L	⊙	L	●	O	O	L	⊙	O	Req(R)	L	●	L	⊙	O	L	⊙	L	⊙	O	O	L +	O	O	O	L +
OPTM and EPTM		✓	✓	D	O	L	⊙	L	⊙	O	O	L	●	O	L	⊙	O	Req(R)	L	●	O	O	O	L	⊙	O	O	L +	O	O	O	L +
Reduced Charge Expedient Mines (550 gallons/event) in a controlled area				I	O	L	⊙	O	L	⊙	L	●	O	O	L	⊙	O	Req(R)	L	●	L	⊙	O	L	⊙	L	⊙	O	O	L +	O	O	O	L +
1.4 NBC Warning and Reporting																															
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	L	⊙	O	O	O		O	O	O	O	L	●	O	O	O	O	O	O	L +	O	O	O	L +		
Classroom, simulators and field maneuver training				I	O	O	O	O		O	O		O	O	O	O	L	●	L	⊙	O	O	O	O	L +	O	O	O	L +		
1.5 Night-Time Squad Engagement																															
RCP, OPTM, and EPTM	✓	✓	✓	D	O	L	⊙	L	⊙	O	O	O		O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +		
Classroom, simulators and live-fire range training				I	O	O	O	O		O	O	O		O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +		
1.6 Unarmed Self-Defense																															
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	O		O	O		O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +		
Classroom, Training on padded mats, and exterior training.				I	O	O	O	O		O	O		O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +		
1.7 Urban Terrain																															
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	L	⊙	O	O	O		O	O	O	O	L	●	O	O	O	O	O	O	L +	O	O	O	L +		
Classroom and designed training area				I	O	O	O	O		O	O		O	O	O	O	L	●	O	O	O	O	O	O	L +	O	O	O	L +		

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 2

Training Alternative Impacts (Based on training locations specified by Alternative 1 LU & FP (Combined Headquarters)

	Alternative				Resource Categories																								
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
1.8 Warfighting and Tactical Operations																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	L ⊙	O		O	L ⊙	O	O	O	O	O		O	O		L ⊙	O	O	L +	O	O	O	L +
Classroom, simulators, and use of live-fire ranges				I	O	O	O	L ⊙		O	O	O	O	O	Req(R)	O		L ⊙	O	L ⊙	L ⊙	O	O	L +	O	O	O	L +
2. BIOLOGICAL AGENT DETECTION																													
2.1 BIDS Employment & Operations																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	L ⊙	L ⊙	L ⊙		O	L ⊙	O	O	O	O	O		O	L ⊙	L ⊙	L ⊙	O	O	L +	O	O	O	L +
Classroom, simulators and field maneuver training				I	O	L ⊙	O	L ⊙		O	O	O	O	O	Req(R)	O		L ⊙	L ⊙	L ⊙	L ⊙	O	O	L +	O	O	O	L +
2.2 BIDS Maintenance																													
RCP	✓			D	O	O	L ⊙	O		O	O	O	L ⊙	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
Classroom, exterior and training in a maintenance bay				I	O	O	O	L ⊙		O	L ⊙	O	L ⊙	O	Req(R)	O		O	O	L ⊙	O	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	O	O	⊙	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
Classroom, exterior (in a controlled area) and training in a maintenance bay				I	O	O	O	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
2.3 LR-BSDS Battlefield Employment																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	L ⊙	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
Classroom and exterior training				I	O	O	O	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
2.4 LR-BSDS Maintenance																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
Classroom and exterior training				I	O	O	O	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
3. NBC RECONNAISSANCE OPERATIONS																													
3.1 FOX Battlefield Employment & Operation																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	L ⊙	L ⊙	L ⊙		O	L ⊙	O	L ⊙	O	O	O		O	L ⊙	L ⊙	L ⊙	O	O	L +	O	O	O	L +
Classroom, simulation and field maneuver training				I	O	L ⊙	O	L ⊙		O	O	O	L ⊙	O	Req(R)	O		L ⊙	L ⊙	L ⊙	L ⊙	O	O	L +	O	O	O	L +
3.2 FOX Maintenance																													
RCP	✓			D	O	O	L ⊙	O		O	O	O	L ⊙	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
Classroom, exterior and training in a maintenance bay				I	O	O	O	L ⊙		O	L ⊙	O	L ⊙	O	Req(R)	O		O	O	L ⊙	O	O	O	L +	O	O	O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 2

Training Alternative Impacts (Based on training locations specified by Alternative 1 LU & FP (Combined Headquarters)

	Alternative				Resource Categories																								
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
OPTM, and EPTM		✓	✓	D	O	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom, exterior (in a controlled area) and training in a maintenance bay				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
4. GENERAL MILITARY TRAINING																													
4.1 General Military Training																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom training with training aids				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
4.2 GMT, Field Training																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction and proficiency demonstration in exterior training areas				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
4.3 GMT, NBC Personal Protective Equipment																													
RCP, and OPTM	✓	✓		D	O	O	L ⊙	O	O	O	O	O	O	O	O	L ●	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by training at a gas chamber (filled with CS (Tear) gas) and in exterior training areas				I	O	O	O	O	O	O	O	O	O	O	O	L ●	O	O	O	O	O	O	O	L +	O	O	O	L +
EPTM			✓	D	O	O	L ⊙	O	O	O	O	O	O	O	O	L ●	O	O	O	O	O	O	O	L +	O	O	O	L +
Exterior instruction followed by training at a gas chamber (filled with CS (Tear) gas)				I	O	O	O	O	O	O	O	O	O	O	O	L ●	O	O	O	O	O	O	O	L +	O	O	O	L +
4.4 Signals & Other Non-verbal Communications																													
RCP, and OPTM	✓	✓		D	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by student exercises				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
EPTM			✓	D	O	O	O	O	O	O	O	O	O	O	O	L ●	O	O	O	O	O	O	O	L +	O	O	O	L +
Exterior instruction followed by student exercises				I	O	O	O	O	O	O	O	O	O	O	O	L ●	O	O	O	O	O	O	O	L +	O	O	O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 2

Training Alternative Impacts (Based on training locations specified by Alternative 1 LU & FP (Combined Headquarters)

	Alternative				Resource Categories																					
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources • Floodplains/Surface Water • Hydrogeology/Groundwater		Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources • Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life • Human Health and Safety		Installation Agreements	Operational Efficiency
4.5 Radio Communications including secure communications																										
RCP, and OPTM	✓	✓		D	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom and communications lab instruction followed by student exercises				I	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
EPTM			✓	D	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Exterior instruction followed by student exercises				I	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
4.6 Computer Operations																										
RCP	✓			D	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction and student exercises in a computer lab				I	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction and student exercises in a computer lab with the computer on a network				I	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
4.7 Physical Fitness and Total Fitness																										
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by physical skill development				I	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
5. MILITARY POLICE OPERATIONS																										
5.1 Basic MP Functions																										
RCP, OPTM, and EPTM	✓	✓	✓	D	O	L ⊙	O	O		O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by student exercises in mock facilities				I	O	L ⊙	O	O		O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
5.2 Advanced Law Enforcement																										
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by student exercises in mock facilities				I	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 2

Training Alternative Impacts (Based on training locations specified by Alternative 1 LU & FP (Combined Headquarters)

	Alternative				Resource Categories																								
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
6. NBC PROCEDURES																													
6.1 NBC Procedures																													
RCP	✓			D	O	L ⊙	L ⊙	O	O	O	O	O	L ⊙	O	Req(N)	L ●	O	O	O	O	O	O	L +	L ⊙	O	O	L +
Classroom instruction followed by lab training and exterior training with open and sealed radiological isotopes				I	O	L ⊙	O	O	O	O	O	O	L ⊙	O	Req(N)	L ●	O	L ⊙	O	O	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	O	L ⊙	L ⊙	O	O	O	O	O	L ⊙	O	Req(N)	L ●	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by lab training with open radiological isotopes and exterior training with materials that simulate the effects of radiological isotopes				I	O	L ⊙	O	O	O	O	O	O	L ⊙	O	Req(N)	L ●	O	L ⊙	O	O	O	O	L +	O	O	O	L +
6.2 NBC Equipment																													
RCP. OPTM, and EPTM	✓	✓	✓	D	O	O	L ⊙	O	O	L ⊙	O	O	O	O	O	L ●	O	O	O	L ⊙	O	O	L +	O	O	O	L +
Classroom instruction followed by exterior training in controlled and non controlled exterior training areas				I	O	O	O	L ⊙	O	O	O	O	O	O	Req(R)	L ●	L ⊙	L ⊙	L ⊙	L ⊙	L ⊙	O	O	L +	O	O	O	L +
6.3 NBC Decon Advanced (Toxic Agent)																													
RCP	✓			D	O	L ⊙	O	O	O	O	O	L ⊙	O	O	Req(R)	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by exterior training and training in a controlled interior environment with toxic agents, wastes disposed of on-site				I	S ⊙	L ⊙	O	O	O	O	O	L ⊙	L ⊙	O	Req(R)	O	O	O	O	O	O	O	O	L +	O	O	O	L ⊙
OPTM, and EPTM		✓	✓	D	O	O	O	O	O	O	O	L ⊙	O	O	Req(N)	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by exterior training and training in a controlled interior environment with toxic agents, wastes disposed of off-site				I	S ⊙	O	O	O	O	O	O	L ⊙	L ⊙	O	Req(N)	O	O	O	O	O	O	O	O	L +	O	O	O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 2

Training Alternative Impacts (Based on training locations specified by Alternative 1 LU & FP (Combined Headquarters)

	Alternative				Resource Categories																									
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
6.4 NBC Survival Recovery																														
RCP	✓			D	O	L ⊙	L ⊙	O	O	O	O	O	L ⊙	O	Req(N)	L ●		O	O	O	O	O	O	L +	L ⊙	O	O	L +
Classroom instruction followed by lab training and exterior training with open and sealed radiological isotopes				I	O	L ⊙	O	O	O	O	O	O	L ⊙	O	Req(N)	L ●		L ⊙	O	O	O	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	O	L ⊙	L ⊙	O	O	O	O	O	L ⊙	O	Req(N)	L ●		O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by lab training with open and sealed radiological isotopes and exterior training with materials that simulate the effects of radiological isotopes				I	O	L ⊙	O	O	O	O	O	O	L ⊙	O	Req(N)	L ●		L ⊙	O	O	O	O	O	L +	O	O	O	L +
7. OBSCURANT PROCEDURES																														
7.1 Obscurant, Employment Principles																														
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	O	O	O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction with training aids				I	O	O	O	O	O	O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
7.2 Obscurant, Employment Operations, Basic (Static)																														
RCP	✓			D	O	L ●	L ⊙	O	O	O	L ⊙	O	O	O	Req(R)	L ●		L ⊙	O	O	L ⊙	O	S ⊙	L +	L ⊙	O	O	L +
Classroom instruction followed by the use of smoke generators (including the release of approximately 20,000 gallons of fog-oil per year)				I	O	L ●	O	L ⊙	O	O	O	O	L ⊙	O	Req(R)	L ●		L ⊙	L ⊙	O	L ⊙	O	O	L +	O	O	O	L +
OPTM		✓		D	O	L ●	L ⊙	O	O	O	O	O	O	O	Req(R)	L ●		L ⊙	O	O	L ⊙	O	S ⊙	L +	L ⊙	O	O	L +
Classroom instruction followed by the use of smoke generators (including the release of approximately 8,500 gallons of fog-oil per year)				I	O	L ●	O	L ⊙	O	O	O	O	L ⊙	O	Req(R)	L ●		L ⊙	L ⊙	O	L ⊙	O	O	L +	O	O	O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 2

Training Alternative Impacts (Based on training locations specified by Alternative 1 LU & FP (Combined Headquarters)

	Alternative				Resource Categories																										
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
EPTM			✓	D	O	L ⊙	L ⊙	O	O	O	O	O	O	O	Req(R)	L ●	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by the use of smoke generators with water and recycling manifolds (including the release of approximately 1,000 gallons per year)				I	O	L ⊙	O	O	O	O	O	O	O	O	Req(R)	L ●	O	O	O	O	O	O	L +	O	O	O	L +
7.3 Obscurant, Employment Operations, Mobile																															
RCP	✓			D	O	L ●	L ⊙	L ⊙	O	O	L ⊙	O	O	O	Req(R)	L ●	L ⊙	L ⊙	L ⊙	O	L ⊙	O	S ⊙	L +	L ⊙	O	O	L +
Exterior instruction followed by the use of smoke generators (release of approximately 41,500 gallons per year)				I	O	L ●	O	L ⊙	O	O	O	O	L ⊙	O	Req(R)	L ●	L ⊙	L ⊙	L ⊙	O	L ⊙	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	O	L ●	L ⊙	L ⊙	O	O	L ⊙	O	O	O	Req(R)	L ●	L ⊙	L ⊙	L ⊙	O	L ⊙	O	S ⊙	L +	L ⊙	O	O	L +
Exterior instruction followed by the use of smoke generators (release of approximately 20,000 gallons per year)				I	O	L ●	O	L ⊙	O	O	O	O	L ⊙	O	Req(R)	L ●	L ⊙	L ⊙	L ⊙	O	L ⊙	O	O	L +	O	O	O	L +
7.4 Obscurant, Employment Operations (Field Training)																															
RCP	✓			D	O	L ●	L ⊙	L ⊙	O	O	L ⊙	O	O	O	Req(R)	L ●	L ⊙	L ⊙	L ⊙	O	L ⊙	O	S ⊙	L +	L ⊙	O	O	L +
Classroom and exterior training followed by the use of smoke generators (release of approximately 64,000 gallons of fog-oil per year)				I	O	L ●	O	L ⊙	O	O	O	O	L ⊙	O	Req(R)	L ●	L ⊙	L ⊙	L ⊙	O	L ⊙	O	O	L +	O	O	O	L +
OPTM		✓		D	O	L ●	L ⊙	L ⊙	O	O	L ⊙	O	O	O	Req(R)	L ●	L ⊙	L ⊙	L ⊙	O	L ⊙	O	S ⊙	L +	L ⊙	O	O	L +
Classroom and exterior training followed by the use of smoke generators (release of approximately 56,000 gallons of fog-oil per year)				I	O	L ●	O	L ⊙	O	O	O	O	L ⊙	O	Req(R)	L ●	L ⊙	L ⊙	L ⊙	O	L ⊙	O	O	L +	O	O	O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 2

Training Alternative Impacts (Based on training locations specified by Alternative 1 LU & FP (Combined Headquarters)

	Alternative				Resource Categories																										
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
EPTM			✓	D	O	L ●	L ⊙	L	⊙	O	L	⊙	O	O	O	Req(R)	L	●	L	⊙	L ⊙	O	L	⊙	O	S	⊙	L	+	L	⊙	O	O	L +
Classroom and exterior training followed by the use of smoke generators (release of approximately 28,500 gallons of fog-oil per year)				I	O	L ●	O	L	⊙	O	O		O	L	⊙	O	Req(R)	L	●	L	⊙	L ⊙	O	L	⊙	O	O	L	+	O	O	O	L +
7.5 Obscurant, Generator Maintenance																															
RCP	✓			D	O	O	L	⊙	O	O	O	O	L	⊙	O	O	O	O	O	O	O	O	O	O	O	L	+	O	O	O	L +
Classroom, exterior and training in a maintenance bay				I	O	O	O	L	⊙	O	O	O	L	⊙	O	Req(R)	O	O	O	O	L ⊙	O	O	O	L	+	O	O	O	L +
OPTM, and EPTM		✓	✓	D	O	O	L	⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L	+	O	O	O	L +
Classroom, exterior (in a controlled area) and training in a maintenance bay				I	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L	+	O	O	O	L +
7.6 Obscurant, Storage Operations																															
RCP	✓			D	O	O	O	O		O	O	O	O	O	O	Req(R)	O	O	O	O	O	O	O	O	L	+	O	O	O	L +
Decentralized uncovered storage				I	O	O	O	L	⊙	O	O	O	L	⊙	O	Req(R)	O	O	O	L	⊙	O	O	O	L	+	O	O	O	L +
OPTM		✓		D	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L	+	O	O	O	L +
Decentralized covered storage				I	O	O	O	S	⊙	O	O	O	L	⊙	O	O	O	O	O	S	⊙	O	O	O	L	+	O	O	O	L +
EPTM			✓	D	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L	+	O	O	O	L +
Centralized covered storage				I	O	O	O	S	⊙	O	O	O	L	⊙	O	O	O	O	O	S	⊙	O	O	O	L	+	O	O	O	L +
8. RADIATION SAFETY																															
8.1 Radiation Safety																															
RCP, and OPTM	✓	✓		D	O	O	O	O		O	O	O	L	⊙	O	Req(N)	O	O	O	O	O	O	O	O	L	+	O	O	O	L +
Classroom instruction followed by lab training with open and sealed radiological isotopes and exterior training with sealed radiological isotopes				I	O	O	O	O		O	O	O	L	⊙	O	Req(N)	O	L	⊙	O	O	O	O	O	L	+	O	O	O	L +
EPTM			✓	D	O	O	O	O		O	O	O	O	O	O	Req(N)	O	O	O	O	O	O	O	O	L	+	O	O	O	L +
Classroom instruction followed by lab training with open and sealed radiological isotopes and exterior training with materials that simulate the effects of radiological isotopes				I	O	O	O	O		O	O	O	L	⊙	O	Req(N)	O	L	⊙	O	O	O	O	O	L	+	O	O	O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 2

Training Alternative Impacts (Based on training locations specified by Alternative 1 LU & FP (Combined Headquarters)

	Alternative				Resource Categories																							
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources • Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
8.2 Radiation, Test and Operations Equipment Storage																												
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Centralized storage with satellite storage locations				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
9. RESEARCH SUPPORT																												
9.1 Research support																												
RCP	✓			D	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Provide new Chemical School and Military Police School Libraries				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Collocate with current Fort Leonard Wood assets				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
9.2 Specialized/Classified and Museum																												
RCP	✓			D	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O		L +	L +	O	O	L +
Provided dedicated specialized material storage at the school library and individual Museums for the Chemical and Military Police schools				I	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	L +	O	O	L +
Provided dedicated specialized material storage and collocate Museums with the current Fort Leonard Wood assets				I	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
10. SMALL ARMS PROCEDURES																												
10.1 Weapons Training																												
RCP, and OPTM	✓	✓		D	O	L ⊙	L ⊙	O	O	O	O	O	O	L ⊙	O	O	O	O	O	L ⊙	O	O	L +	O	O	O	L +
Classroom instruction followed by simulator and live-fire weapons training with simulated and high-explosive MK-19 rounds; and other high-explosive rounds				I	O	O	L ⊙	L ⊙	O	O	O	O	O	O	Req(N)	O	L ⊙	O	L ⊙	L ⊙	O	O	L +	O	O	O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 2

Training Alternative Impacts (Based on training locations specified by Alternative 1 LU & FP (Combined Headquarters)

	Alternative				Resource Categories																								
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
EPTM			✓	D	O	L ⊙	L ⊙	O	O	O	O	O	O	L ⊙	O	O	O	O	O	O	L ⊙	O	O	L +	O	O	O	L +
Classroom instruction followed by simulator and live-fire weapons training with simulated MK-19 rounds; and other high-explosive rounds				I	O	O	L ⊙	L ⊙	O	O	O	O	O	O	Req(N)	O	L ⊙	O	L ⊙	L ⊙	O	O	L +	O	O	O	L +
10.2 Weapons Training, Pistol																													
No Action - Baseline				D	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L ●
				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L ●
RCP, OPTM, and EPTM	✓	✓	✓	D	O	L ⊙	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by simulator and live-fire weapons training				I	O	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
10.3 Weapons Storage																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by student exercises in mock facilities				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
11. VEHICLE OPERATIONS																													
11.1 Vehicle Operations, Driver Qualification																													
RCP	✓			D	O	L ⊙	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by driving practice				I	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	O	L ⊙	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by driving practice augmented by computer simulation				I	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
11.2 Evasive Driving																													
RCP, and OPTM	✓	✓		D	O	L ⊙	L ⊙	O	O	O	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by driving practice				I	O	L ⊙	O	O	O	O	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	L +	O		O	L +
EPTM			✓	D	O	L ⊙	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Exterior instruction followed by driving practice				I	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 2

Training Alternative Impacts (Based on training locations specified by Alternative 1 LU & FP (Combined Headquarters)

	Alternative				Resource Categories																								
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
11.3 Vehicle Maintenance																													
RCP	✓			D	O	O	L ⊙	O		O	O	O	L ⊙	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
Classroom, exterior and training in a maintenance bay				I	O	O	L ⊙	L ⊙		O	L ⊙	O	L ⊙	O	Req(R)	O		O	O	L ⊙	O	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	O	O	L ⊙	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
Classroom, exterior (in a controlled area) and training in a maintenance bay				I	O	O	L ⊙	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 3
Training Alternative Impacts (Based on training at locations specified by Alternative 2 LU & FP - Separate Headquarters)

Impact Matrix 3
Training Alternative Impacts (Based on training locations specified by Alternative 2 LU & FP (Separate Headquarters)

	Alternative				Resource Categories																								
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
1. BATTLEFIELD PROCEDURES																													
1.1 Call-For Fire Support																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O			O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
Classroom with 35mm slides				I	O	O	O			O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
1.2 Maneuver Operations																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	L ⊙		O	L ⊙	O	O	O	O	L ●		O	O	L ⊙	O	O	O	L +	L ⊙	O	O	L +
Classroom, simulation and field maneuver training				I	O	O	O	L ⊙		O	O	O	O	O	Req(R)	L ●		L ⊙	L ⊙	L ⊙	L ⊙	O	O	L +	O	O	O	L +
1.3 Mines and Obstacles																													
RCP	✓			D	O	L ⊙	L ⊙	O		O	L ●	O	L ●	O	Req(R)	L ●		O	O	O	L ⊙	O	O	L +	O	O	O	L +
Expedient Mines (900 gallons/event)				I	O	L ⊙	O	L ⊙		L ●	O	O	L ⊙	O	Req(R)	L ●		L ⊙	O	L ⊙	L ⊙	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	O	L ⊙	L ⊙	O		O	L ●	O	L ⊙	O	Req(R)	L ●		O	O	O	L ⊙	O	O	L +	O	O	O	L +
Reduced Charge Expedient Mines (550 gallons/event) in a controlled area				I	O	L ⊙	O	L ⊙		L ●	O	O	L ⊙	O	Req(R)	L ●		L ⊙	O	L ⊙	L ⊙	O	O	L +	O	O	O	L +
1.4 NBC Warning and Reporting																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	L ⊙	O		O	O	O	O	O	O	L ●		O	O	O	O	O	O	L +	O	O	O	L +
Classroom, simulators and field maneuver training				I	O	O	O	O		O	O	O	O	O	O	L ●		L ⊙	O	O	O	O	O	L +	O	O	O	L +
1.5 Night-Time Squad Engagement																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	L ⊙	L ⊙	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
Classroom, simulators and live-fire range training				I	O	O	O	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
1.6 Unarmed Self-Defense																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
Classroom, Training on padded mats, and exterior training.				I	O	O	O	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
1.7 Urban Terrain																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	L ⊙	O		O	O	O	O	O	O	L ●		O	O	O	O	O	O	L +	O	O	O	L +
Classroom and designed training area				I	O	O	O	O		O	O	O	O	O	O	L ●		O	O	O	O	O	O	L +	O	O	O	L +

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Impact Matrix 3
Training Alternative Impacts (Based on training locations specified by Alternative 2 LU & FP (Separate Headquarters)

	Alternative				Resource Categories																						
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
1.8 Warfighting & Tactical Operations																											
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	L ⊙	O	O	L ⊙	O	O	O	O	O	O	O	O	O	L ⊙	O	O	L +	O	O	O	L +
Classroom, simulators, and use of live-fire ranges				I	O	O	O	L ⊙	O	O	O	O	O	Req(R)	O	L ⊙	O	L ⊙	L ⊙	L ⊙	O	O	L +	O	O	O	L +
2. BIOLOGICAL AGENT DETECTION																											
2.1 BIDS Employment & Operations																											
RCP, OPTM, and EPTM	✓	✓	✓	D	O	L ⊙	L ⊙	L ⊙	O	O	L ⊙	O	O	O	O	O	O	O	L ⊙	L ⊙	L ⊙	O	O	L +	O	O	O	L +
Classroom, simulators and field maneuver training				I	O	L ⊙	O	L ⊙	O	O	O	O	O	Req(R)	O	L ⊙	L ⊙	L ⊙	L ⊙	L ⊙	O	O	L +	O	O	O	L +
2.2 BIDS Maintenance																											
RCP	✓			D	O	O	L ⊙	O	O	O	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom, exterior and training in a maintenance bay				I	O	O	O	L ⊙	O	L ⊙	O	L ⊙	O	Req(R)	O	O	O	O	L ⊙	O	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	O	O	⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom, exterior (in a controlled area) and training in a maintenance bay				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
2.3 LR-BSDS Battlefield Employment																											
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom and exterior training				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
2.4 LR-BSDS Maintenance																											
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom and exterior training				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
3. NBC RECONNAISSANCE OPERATIONS																											
3.1 FOX Battlefield Employment & Operation																											
RCP, OPTM, and EPTM	✓	✓	✓	D	O	L ⊙	L ⊙	L ⊙	O	O	L ⊙	O	L ⊙	O	O	O	O	O	L ⊙	L ⊙	L ⊙	O	O	L +	O	O	O	L +
Classroom, simulation and field maneuver training				I	O	L ⊙	O	L ⊙	O	O	O	O	L ⊙	O	Req(R)	O	L ⊙	L ⊙	L ⊙	L ⊙	O	O	L +	O	O	O	L +
3.2 FOX Maintenance																											
RCP	✓			D	O	O	L ⊙	O	O	O	O	O	L ⊙	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom, exterior and training in a maintenance bay				I	O	O	O	L ⊙	O	L ⊙	O	O	L ⊙	O	Req(R)	O	O	O	O	L ⊙	O	O	O	L +	O	O	O	L +

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Impact Matrix 3
Training Alternative Impacts (Based on training locations specified by Alternative 2 LU & FP (Separate Headquarters)

	Alternative				Resource Categories																										
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
OPTM, and EPTM		✓	✓	D	O	O	L ⊙	O			O	O	O	O	O	O						O	O	L +	O	O	O	L +
Classroom, exterior (in a controlled area) and training in a maintenance bay				I	O	O	O	O			O	O	O	O	O	O						O	O	L +	O	O	O	L +
4. GENERAL MILITARY TRAINING																															
4.1 General Military Training																															
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	O			O	O	O	O	O	O						O	O	L +	O	O	O	L +
Classroom training with training aids				I	O	O	O	O			O	O	O	O	O	O						O	O	L +	O	O	O	L +
4.2 GMT, Field Training																															
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	L ⊙	O			O	O	O	O	O	O						O	O	L +	O	O	O	L +
Classroom instruction and proficiency demonstration in exterior training areas				I	O	O	O	O			O	O	O	O	O	O						O	O	L +	O	O	O	L +
4.3 GMT, NBC Personal Protective Equipment																															
RCP, and OPTM	✓	✓		D	O	O	L ⊙	O			O	O	O	O	O	O	L ●					O	O	L +	O	O	O	L +
Classroom instruction followed by training at a gas chamber (filled with CS (Tear) gas) and in exterior training areas				I	O	O	O	O			O	O	O	O	O	O	L ●					O	O	L +	O	O	O	L +
EPTM			✓	D	O	O	L ⊙	O			O	O	O	O	O	O	L ●					O	O	L +	O	O	O	L +
Exterior instruction followed by training at a gas chamber (filled with CS (Tear) gas)				I	O	O	O	O			O	O	O	O	O	O	L ●					O	O	L +	O	O	O	L +
4.4 Signals & Other Non-verbal Communications																															
RCP, and OPTM	✓	✓		D	O	O	O	O			O	O	O	O	O	O						O	O	L +	O	O	O	L +
Classroom instruction followed by student exercises				I	O	O	O	O			O	O	O	O	O	O						O	O	L +	O	O	O	L +
EPTM			✓	D	O	O	O	O			O	O	O	O	O	O	L ●					O	O	L +	O	O	O	L +
Exterior instruction followed by student exercises				I	O	O	O	O			O	O	O	O	O	O	L ●					O	O	L +	O	O	O	L +

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Impact Matrix 3 Training Alternative Impacts (Based on training locations specified by Alternative 2 LU & FP (Separate Headquarters)	Alternative				Resource Categories																							
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
4.5 Radio Communications including secure communications																												
RCP, and OPTM	✓	✓		D	O	O	O	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O		O	L +
Classroom and communications lab instruction followed by student exercises				I	O	O	O	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O		O	L +
EPTM			✓	D	O	O	O	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O		O	L +
Exterior instruction followed by student exercises				I	O	O	O	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O		O	L +
4.6 Computer Operations																												
RCP	✓			D	O	O	O	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O		O	L +
Classroom instruction and student exercises in a computer lab				I	O	O	O	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O		O	L +
OPTM, and EPTM		✓	✓	D	O	O	O	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O		O	L +
Classroom instruction and student exercises in a computer lab with the computer on a network				I	O	O	O	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O		O	L +
4.7 Physical Fitness and Total Fitness																												
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O		O	L +
Classroom instruction followed by physical skill development				I	O	O	O	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O		O	L +
5. MILITARY POLICE OPERATIONS																												
5.1 Basic MP Functions																												
RCP, OPTM, and EPTM	✓	✓	✓	D	O	L ⊙	O	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O		O	L +
Classroom instruction followed by student exercises in mock facilities				I	O	L ⊙	O	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O		O	L +
5.2 Advanced Law Enforcement																												
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O		O	L +
Classroom instruction followed by student exercises in mock facilities				I	O	O	O	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O		O	L +

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Impact Matrix 3
Training Alternative Impacts (Based on training locations specified by Alternative 2 LU & FP (Separate Headquarters)

	Alternative				Resource Categories																								
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
6. NBC PROCEDURES																													
6.1 NBC Procedures																													
RCP	✓			D	O	L ⊙	L ⊙	O	O	O	O	L ⊙	O	Req(N)	L ●	O	O	O	O	O	O	L +	L ⊙	O	O	L +
Classroom instruction followed by lab training and exterior training with open and sealed radiological isotopes				I	O	L ⊙	O	O	O	O	O	L ⊙	O	Req(N)	L ●	L ⊙	O	O	O	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	O	L ⊙	L ⊙	O	O	O	O	L ⊙	O	Req(N)	L ●	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by lab training with open radiological isotopes and exterior training with materials that simulate the effects of radiological isotopes				I	O	L ⊙	O	O	O	O	O	L ⊙	O	Req(N)	L ●	L ⊙	O	O	O	O	O	L +	O	O	O	L +
6.2 NBC Equipment																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	L ⊙	O	O	L ⊙	O	O	O	O	L ●	O	O	O	L ⊙	O	O	L +	O	O	O	L +
Classroom instruction followed by exterior training in controlled and non controlled exterior training areas				I	O	O	O	L ⊙	O	O	O	O	O	Req(R)	L ●	L ⊙	L ⊙	L ⊙	L ⊙	O	O	L +	O	O	O	L +
6.3 NBC Decon Advanced (Toxic Agent)																													
RCP	✓			D	O	L ⊙	O	O	O	O	O	L ⊙	O	O	Req(R)	O	O	O	O	O	O	O	O	L +	O	S ⊙	O	L +
Classroom instruction followed by exterior training and training in a controlled interior environment with toxic agents, wastes disposed of on-site				I	S ⊙	L ⊙	O	O	O	O	O	L ⊙	L ⊙	O	Req(R)	O	O	O	O	O	O	O	O	L +	O	O	O	L ⊙
OPTM, and EPTM		✓	✓	D	O	O	O	O	O	O	O	L ⊙	O	O	Req(N)	O	O	O	O	O	O	O	O	L +	O	S ⊙	O	L +
Classroom instruction followed by exterior training and training in a controlled interior environment with toxic agents, wastes disposed of off-site				I	S ⊙	O	O	O	O	O	O	L ⊙	L ⊙	O	Req(N)	O	O	O	O	O	O	O	O	L +	O	O	O	L +

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Impact Matrix 3
Training Alternative Impacts (Based on training locations specified by Alternative 2 LU & FP (Separate Headquarters)

	Alternative				Resource Categories																								
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
6.4 NBC Survival Recovery																													
RCP	✓			D	O	L ⊙	L ⊙	O	O	O	O	O	L ⊙	O	Req(N)	L ●		O	O	O	O	O	O	L +	L ⊙	O	O	L +
Classroom instruction followed by lab training and exterior training with open and sealed radiological isotopes				I	O	L ⊙	O	O	O	O	O	O	L ⊙	O	Req(N)	L ●	L ⊙		O	O	O	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	O	L ⊙	L ⊙	O	O	O	O	O	L ⊙	O	Req(N)	L ●		O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by lab training with open and sealed radiological isotopes and exterior training with materials that simulate the effects of radiological isotopes				I	O	L ⊙	O	O	O	O	O	O	L ⊙	O	Req(N)	L ●	L ⊙		O	O	O	O	O	L +	O	O	O	L +
7. OBSCURANT PROCEDURES																													
7.1 Obscurant, Employment Principles																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	O	O	O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction with training aids				I	O	O	O	O	O	O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
7.2 Obscurant, Employment Operations, Basic (Static)																													
RCP	✓			D	O	L ●	L ⊙	O	O	O	L ⊙	O	O	O	Req(R)	L ●		L ⊙	O	O	L ⊙	O	S ⊙	L +	O	O	O	L +
Classroom instruction followed by the use of smoke generators (including the release of approximately 20,000 gallons of fog-oil per year)				I	O	L ●	O	L ⊙	O	O	O	O	L ⊙	O	Req(R)	L ●		L ⊙	L ⊙	O	L ⊙	O	O	L +	O	O	O	L +
OPTM		✓		D	O	L ●	L ⊙	O	O	O	O	O	O	O	Req(R)	L ●		L ⊙	O	O	L ⊙	O	S ⊙	L +	O	O	O	L +
Classroom instruction followed by the use of smoke generators (including the release of approximately 8,500 gallons of fog-oil per year)				I	O	L ●	O	L ⊙	O	O	O	O	L ⊙	O	Req(R)	L ●		L ⊙	L ⊙	O	L ⊙	O	O	L +	O	O	O	L +

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Impact Matrix 3
Training Alternative Impacts (Based on training locations specified by Alternative 2 LU & FP (Separate Headquarters)

	Alternative				Resource Categories																										
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
EPTM			✓	D	O	L ⊙	L ⊙		O	O	O	O	O	O	Req(R)	L ●		O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by the use of smoke generators with water and recycling manifolds (including the release of approximately 1,000 gallons of fog oil per year)				I	O	L ⊙	O		O	O	O	O	O	O	Req(R)	L ●		O	O	O	O	O	O	L +	O	O	O	L +
7.3 Obscurant, Employment Operations, Mobile																															
RCP	✓			D	O	L ●	L ⊙	L ⊙		O	L ⊙	O	O	O	Req(R)	L ●		L ⊙	L ⊙	O	L ⊙	O	S ⊙	L +	O	O	O	L +
Exterior instruction followed by the use of smoke generators (release of approximately 41,500 gallons per year)				I	O	L ●	O	L ⊙		O	O	O	L ⊙	O	Req(R)	L ●		L ⊙	L ⊙	O	L ⊙	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	O	L ●	L ⊙	L ⊙		O	L ⊙	O	O	O	Req(R)	L ●		L ⊙	L ⊙	O	L ⊙	O	S ⊙	L +	O	O	O	L +
Exterior instruction followed by the use of smoke generators (release of approximately 20,000 gallons per year)				I	O	L ●	O	L ⊙		O	O	O	L ⊙	O	Req(R)	L ●		L ⊙	L ⊙	O	L ⊙	O	O	L +	O	O	O	L +
7.4 Obscurant, Employment Operations (Field Training)																															
RCP	✓			D	O	L ●	L ⊙	L ⊙		O	L ⊙	O	O	O	Req(R)	L ●		L ⊙	L ⊙	O	L ⊙	O	S ⊙	L +	O	O	O	L +
Classroom and exterior training followed by the use of smoke generators (release of approximately 64,000 gallons of fog-oil per year)				I	O	L ●	O	L ⊙		O	O	O	L ⊙	O	Req(R)	L ●		L ⊙	L ⊙	O	L ⊙	O	O	L +	O	O	O	L +
OPTM		✓		D	O	L ●	L ⊙	L ⊙		O	L ⊙	O	O	O	Req(R)	L ●		L ⊙	L ⊙	O	L ⊙	O	S ⊙	L +	O	O	O	L +
Classroom and exterior training followed by the use of smoke generators (release of approximately 56,000 gallons of fog-oil per year)				I	O	L ●	O	L ⊙		O	O	O	L ⊙	O	Req(R)	L ●		L ⊙	L ⊙	O	L ⊙	O	O	L +	O	O	O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 3
Training Alternative Impacts (Based on training locations specified by Alternative 2 LU & FP (Separate Headquarters)

	Alternative				Resource Categories																								
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
EPTM			✓	D	O	L ●	L ⊙	L ⊙		O	L ⊙	O	O	O	Req(R)	L ●	L ⊙	L ⊙	L ⊙		L ⊙	O	S ⊙	L +	O	O	O	L +
Classroom and exterior training followed by the use of smoke generators (release of approximately 28,500 gallons of fog-oil per year)				I	O	L ●	O	L ⊙		O	O	O	L ⊙	O	Req(R)	L ●	L ⊙	L ⊙	L ⊙	O	L ⊙	O	O	L +	O	O	O	L +
7.5 Obscurant, Generator Maintenance																													
RCP	✓			D	O	O	L ⊙	O		O	O	O	L ⊙	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom, exterior and training in a maintenance bay				I	O	O	O	L ⊙		O	O	O	L ⊙	O	Req(R)	O	O	O	L ⊙	O	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	O	O	L ⊙	O		O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom, exterior (in a controlled area) and training in a maintenance bay				I	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
7.6 Obscurant, Storage Operations																													
RCP	✓			D	O	O	O	O		O	O	O	O	O	Req(R)	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Decentralized uncovered storage				I	O	O	O	L ⊙		O	O	O	L ⊙	O	Req(R)	O	O	O	L ⊙	O	O	O	O	L +	O	O	O	L +
OPTM		✓		D	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Decentralized covered storage				I	O	O	O	S ⊙		O	O	O	L ⊙	O	O	O	O	O	O	S ⊙	O	O	O	L +	O	O	O	L +
EPTM			✓	D	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Centralized covered storage				I	O	O	O	S ⊙		O	O	O	L ⊙	O	O	O	O	O	O	S ⊙	O	O	O	L +	O	O	O	L +
8. RADIATION SAFETY																													
8.1 Radiation Safety																													
RCP, and OPTM	✓	✓		D	O	O	O	O		O	O	O	L ⊙	O	Req(N)	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by lab training with open and sealed radiological isotopes and exterior training with sealed radiological isotopes				I	O	O	O	O		O	O	O	L ⊙	O	Req(N)	O	L ⊙	O	O	O	O	O	O	L +	O	O	O	L +
EPTM			✓	D	O	O	O	O		O	O	O	O	O	Req(N)	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by lab training with open and sealed radiological isotopes and exterior training with materials that simulate the effects of radiological isotopes				I	O	O	O	O		O	O	O	L ⊙	O	Req(N)	O	L ⊙	O	O	O	O	O	O	L +	O	O	O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 3
Training Alternative Impacts (Based on training locations specified by Alternative 2 LU & FP (Separate Headquarters)

	Alternative				Resource Categories																							
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
8.2 Radiation, Test and Operations Equipment Storage																												
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	O			O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
Centralized storage with satellite storage locations				I	O	O	O	O			O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
9. RESEARCH SUPPORT																												
9.1 Research support																												
RCP	✓			D	L ⊙	O	O	O			O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
Provide new Chemical School and Military Police School Libraries				I	L ⊙	O	O	O			O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	L ⊙	O	O	O			O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
Collocate with current Fort Leonard Wood assets				I	L ⊙	O	O	O			O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
9.2 Specialized/Classified and Museum																												
RCP	✓			D	O	O	O	O			O	O	O	O	O	O		O	O	O	O	O	O	L +	L +	O	O	L +
Provided dedicated specialized material storage at the school library and individual Museums for the Chemical and Military Police schools				I	O	O	O	O			O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	O	O	O	O			O	O	O	O	O	O		O	O	O	O	O	O	L +	L +	O	O	L +
Provided dedicated specialized material storage and collocate Museums with the current Fort Leonard Wood assets				I	O	O	O	O			O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
10. SMALL ARMS PROCEDURES																												
10.1 Weapons Training																												
RCP, and OPTM	✓			D	O	L ⊙	L ⊙	O			O	O	O	O	O	O		O	O	O	L ⊙	O	O	L +	O	O	O	L +
Classroom instruction followed by simulator and live-fire weapons training with simulated and high-explosive MK-19 rounds; and other high-explosive rounds				I	O	O	L ⊙	L ⊙			O	O	O	O	O	Req(R)		O	L ⊙	O	L ⊙	L ⊙	O	L +	O		O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 3
Training Alternative Impacts (Based on training locations specified by Alternative 2 LU & FP (Separate Headquarters)

	Alternative				Resource Categories																								
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
EPTM			✓	D	O	L ⊙	L ⊙		O	O	O	O	O	O	O	O	O	O	O	O	L ⊙	O	O	L +	O	O	O	L +
Classroom instruction followed by simulator and live-fire weapons training with simulated MK-19 rounds; and other high-explosive rounds				I	O	O	L ⊙	L ⊙		O	O	O	O	O	Req(R)	O	L ⊙	O	L ⊙	L ⊙	O	O	L +	O	O	O	L +
10.2 Weapons Training, Pistol																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	L ⊙	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by simulator and live-fire weapons training				I	O	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
10.3 Weapons Storage																													
RCP, OPTM, and EPTM	✓	✓	✓	D	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by student exercises in mock facilities				I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
11. VEHICLE OPERATIONS																													
11.1 Vehicle Operations, Driver Qualification																													
RCP	✓			D	O	L ⊙	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by driving practice				I	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	O	L ⊙	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by driving practice augmented by computer simulation				I	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
11.2 Evasive Driving																													
RCP, and OPTM	✓	✓		D	O	L ⊙	L ⊙	O	O	O	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Classroom instruction followed by driving practice				I	O	L ⊙	O	O	O	O	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
EPTM			✓	D	O	L ⊙	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +
Exterior instruction followed by driving practice				I	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +	O	O	O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 3
Training Alternative Impacts (Based on training locations specified by Alternative 2 LU & FP (Separate Headquarters)

	Alternative				Resource Categories																								
	RCP Alternative	OPTM (Army's Proposed) Alt.	EPTM Alternative	Direct/Indirect Impact	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrogeology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
11.3 Vehicle Maintenance																													
RCP	✓			D	O	O	L ⊙	O		O	O	O	L ⊙	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
Classroom, exterior and training in a maintenance bay				I	O	O	L ⊙	L ⊙		O	L ⊙	O	L ⊙	O	Req(R)	O		O	O	L ⊙	O	O	O	L +	O	O	O	L +
OPTM, and EPTM		✓	✓	D	O	O	L ⊙	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +
Classroom, exterior (in a controlled area) and training in a maintenance bay				I	O	O	L ⊙	O		O	O	O	O	O	O	O		O	O	O	O	O	O	L +	O	O	O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 4
Facility Development Impacts - Army's Proposed LU & FP
(Combined Headquarters and Instruction)

Impact Matrix 4
Facility Development Impacts - Army's Proposed LU & FP (Combined Headquarters and Instruction)

		Direct/Indirect Impacts	Environmental Criteria																								Operational Efficiency
			Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	
1.0	**General Officer Quarters (P-14)**	D	O	S ⊙	O		O	O	O	O	O	O	O	L ●		O	O	O	O	O	O	S +	L +	S ⊙	O	O
	new construction northwest side of Piney Hills Drive	I	O	S ⊙	O	L ⊙		O	O	O	O	O	O	O		O	O	S ⊙	O	O	O	S +	L +		O	O
2.0	**Sixteen-Building Military Operations in Urbanized Terrain (MOUT) Facility (P-27)**	D	O	S ⊙	O		O	O	S ⊙	S ⊙	O	O	Req(N)	L ●		O	O	O	O	O	O	S +		O	S ⊙	O	L +
	new construction north of Babb Airfield	I	O	S ⊙	O	L ⊙		O	O	O	O	O	Req(N)	O		O	O	S ⊙	O	O	O	S +	O		O	O	L +
3.0	**Chemical Defense Training Facility (P-28)**	D	O	S ⊙	O		O	O	S ⊙	S ⊙	O	O	Req(N)	L ●		O	L ⊙		O	L ⊙	O	O	S +	O	S ⊙	O	L +
	new construction near TA 246	I	L ⊙	S ⊙	O	L ⊙		O	O	S ⊙	O	O	Req(N)	O	L ⊙	O	O	S ⊙	O	O	O	O	S +	O		O	L +
4.0	**General Instruction Facility**																										
	Administration, Base Operations (P-1)	D	L +	O	S ⊙		O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +
	located in Lincoln and Hoge halls	I	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +
	Administration, Chemical (P-2)	D	L +	S ⊙	S ⊙		O	O	S ●	O	O	O	Req(N)	O		O	O	O	L ⊙	O	O	S +	O	S ⊙	O	L +
	new construction north of Lincoln Hall	I	S ⊙	S ⊙	O	L ⊙		O	O	S ⊙	O	O	Req(N)	O	L ⊙	O	O	S ⊙	O	O	O	S +	O		O	L +
	Administration, 11th Chemical (P-10)	D	L +	O	O		O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +
	located in unit administration areas at Specker Barracks	I	S ⊙	O	O		O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +
	Administration, MP (P-16)	D	L +	S ⊙	S ⊙		O	O	S ●	O	O	O	Req(N)	O		O	O	O	L ⊙	O	O	S +	O	S ⊙	O	L +
	new construction north of Lincoln Hall	I	S ⊙	S ⊙	O	L ⊙		O	O	S ⊙	O	O	Req(N)	O	L ⊙	O	O	S ⊙	O	O	O	S +	O		O	L +
	Library, Chemical (P-5)	D	L +	O	O		O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +
	located in Clarke Hall	I	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +
	Library, MP (P-17)	D	L +	O	O		O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +
	located in Clarke Hall	I	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +
	Medical/Dental Base Operations (P-10)	D	L +	O	O		O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +
	located in Troop Medical and Dental Clinics, and General Leonard Wood Army Community Hospital	I	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 4 Facility Development Impacts - Army's Proposed LU & FP (Combined Headquarters and Instruction)		Direct/Indirect Impacts	Environmental Criteria																								
			Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
	NCO Instruction, Chemical (P-7)	D	L +	S ⊙	S ⊙		O		O	S ●		O	O	O	Req(N)	O		O	O		O	L ⊙	O	S ⊙	S +	O	S ⊙	O	L +
	new construction north of Lincoln Hall	I	S ⊙	S ⊙		O	L ⊙	O		O	S ⊙	O	O	O	Req(N)	O	L ⊙		O	S ⊙		O	O		O	S +	O		O	L +
	NCO Instruction, MP (P-19)	D	L +	S ⊙	S ⊙		O		O	S ●		O	O	O	Req(N)	O		O	O		O	L ⊙	O	S ⊙	S +	O	S ⊙	O	L +
	new construction north of Lincoln Hall	I	S ⊙	S ⊙		O	L ⊙	O		O	S ⊙	O	O	O	Req(N)	O	L ⊙		O	S ⊙		O	O		O	S +	O		O	L +
	Officer Instruction, Chemical (P-8)	D	L +	S ⊙	S ⊙		O		O	S ●		O	O	O	Req(N)	O		O	O		O	L ⊙	O	S ⊙	S +	O	S ⊙	O	L +
	new construction north of Lincoln Hall	I	S ⊙	S ⊙		O	L ⊙	O		O	S ⊙	O	O	O	Req(N)	O	L ⊙		O	S ⊙		O	O		O	S +	O		O	L +
	Officer Instruction, MP (P-20)	D	L +	S ⊙	S ⊙		O		O	S ●		O	O	O	Req(N)	O		O	O		O	L ⊙	O	S ⊙	S +	O	S ⊙	O	L +
	new construction north of Lincoln Hall	I	S ⊙	S ⊙		O	L ⊙	O		O	S ⊙	O	O	O	Req(N)	O	L ⊙		O	S ⊙		O	O		O	S +	O		O	L +
	RADLAB (P-8)	D	L +	S ⊙	S ⊙		O		O	S ●		O	O	O	Req(N)	O		O	O		O	O	O	S ⊙	S +	O	S ⊙	O	L +
	new construction north of Lincoln Hall	I	S ⊙	S ⊙		O	L ⊙	O		O	S ⊙	O	O	O	O	O		O	O	S ⊙		O	O		O	S +	O		O	L +
5.0	**Applied Instruction Facility**																										
	BIDS & FOX Maintenance (P-3)	D		O		O	S ⊙		O	O		O	O	O	O	O		O	O		O	O	O	S +	O		O		O
	renovation of Building 5265 (DOL Maintenance)	I	L +		O		O		O	O		O	O	O	O	O		O	O		O	O	O	S +	O		O		O
	BIDS & FOX Organizational Parking (P-4)	D		O		O		O		O		O	O	O	O	O		O	O		O	O		O	O		O		O
	near Building 5265 (DOL Maintenance) and at TA 250	I	L +		O		O		O	O		O	O	O	O	O		O	O		O	O		O	O		O		O
	Museum, Chemical (P-6)	D		O	S ⊙	S ⊙		O		O		O	O	O	O	O		O	O		O	O	S +	L +	S ⊙		O	L +
	new addition onto Walker Museum	I	L +	S ⊙		O	L ⊙	O		O		O	O	O	O	O		O	S ⊙		O	O	S +	L +		O	O	L +
	Museum, MP (P-18)	D		O	S ⊙	S ⊙		O		O		O	O	O	O	O		O	O		O	O	S +	L +	S ⊙		O	L +
	new addition onto Walker Museum	I	L +	S ⊙		O	L ⊙	O		O		O	O	O	O	O		O	S ⊙		O	O	S +	L +		O	O	L +
	OSUT, Chemical (P-9)	D		O	S ⊙	S ⊙		O		O	S ⊙		O	O	Req(N)	L ●		O	O		O	O	O	S +		O	S ⊙	O	L +
	new construction west of the 800 Area barracks and north of South Dakota Avenue	I	L +	S ⊙		O	L ⊙	O		O		O	O	O	Req(N)	O		O	S ⊙		O	O	S +		O		O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27 Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 4
Facility Development Impacts - Army's Proposed LU & FP (Combined Headquarters and Instruction)

		Direct/Indirect Impacts	Environmental Criteria: Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
	OSUT, MP (P-21)	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	S ⊙	L ●		O	O	O	L ⊙	O	O	S +	O	S ⊙	O	L +
	new construction west of the 800 Area barracks and south of South Dakota Avenue	I	L +	S ⊙	O	L ⊙	O	O	O	O	S +	O	S ⊙	O	L ⊙	O	O	S ⊙	O	O	O	S +	O	O		L +
	Vehicle Maintenance, Cantonment (P-22)	D	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	assign existing, available facility to 11th Chem Co and use available area at Building 5265 (DOL Maintenance)	I	L +	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	Vehicle Parking, Cantonment (P-24)	D	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	assign existing, available facility to 11th Chem Co and use available area near Building 5265 (DOL Maintenance)	I	L +	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	Warehouse Storage (P-26)	D	O	O	S ⊙	O	O	O	O	O	S +	O	O	O	O	O	O	O	O	O	O	S +	O	S ⊙	O	O
	renovate building 2310 and 2311	I	L +	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	S +	O	O	O	O
6.0	**Unaccompanied Personnel Housing**																									
	UPH, Enlisted (new) (P-11)	D	L +	S ⊙	S ⊙		O	O	S ●	O	O	O	Req(N)	L ●		O	O		O	L ⊙	O	O	S +	L +	S ⊙	O	L +
	new construction (888 spaces) north of GIF near Lincoln Hall	I	L +	S ⊙	O	L ⊙	O	O	O	O	O	O	Req(N)	O	L ⊙	O	O	S ⊙	O	O	O	S +	L +	O	O	L +
	Enlisted Dining (new) (P-13)	D	L +	S ⊙	S ⊙		O	O	S ●	O	O	O	Req(N)	O		O	O		O	L ⊙	O	O	S +	L +	S ⊙	O	L +
	new construction at new UPH area, north of GIF near Lincoln Hall	I	L +	S ⊙	O	L ⊙	O	O	O	O	O	O	Req(N)	O	L ⊙	O	O	S ⊙	O	O	O	S +	L +	O	O	L +
7.0	**Range Modifications**																									
	9mm Familiarization and Qualification (P-37)	D	O	S ⊙	S ⊙		O	O	O	O	O	O	Req(N)	L ●		O	O		O	O	O	O	S +	L +	S ⊙	O	L +
	New construction/overlay at Range 17	I	O	S ⊙	O	S ⊙	O	O	O	O	O	O	Req(N)	O	O	O	O	S ⊙	O	O	O	O	S +	L +	O	O	L +
	9mm Fire Arms Training Simulator (P-29)	D	O	S ⊙	S ⊙		O	O	O	O	O	O	O	O		O	O		O	O	O	O	S +	L +	S ⊙	O	L +
	New construction at Range 21	I	O	S ⊙	O	S ⊙	O	O	O	O	O	O	O	O	O	O	O	S ⊙	O	O	O	O	S +	L +	O	O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 4 Facility Development Impacts - Army's Proposed LU & FP (Combined Headquarters and Instruction)	Direct/Indirect Impacts	Environmental Criteria																												
		Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
New construction at Babb Airfield	I	O	S ⊙	O	S ⊙	O	O	O	O	O	O	Req(N)	O	O	O	S ⊙	O	O	O	S +	L +	O	O	L +
Combat Pistol Familiarization and Qualification (P-38)	D	O	S ⊙	S ⊙	O	O	O	O	O	O	O	Req(N)	L ●	O	O	O	O	O	O	S +	L +	S ⊙	O	L +
New construction/overlay at Range 17	I	O	S ⊙	O	S ⊙	O	O	O	O	O	O	Req(N)	O	O	O	S ⊙	O	O	O	S +	L +	O	O	L +
Evasive Driving (P-32)	D	O	S ⊙	S ⊙	O	O	S ⊙	O	O	O	O	Req(N)	L ●	O	O	O	O	O	O	S +	L +	S ⊙	O	L +
New construction at TA 109A	I	O	S ⊙	O	S ⊙	O	O	O	O	O	O	Req(N)	O	O	S ⊙	S ⊙	O	O	O	S +	L +	O	O	L +
Expedient Mine Training Area (Flame Range) (P-33)	D	O	S ⊙	S ⊙	O	O	S ⊙	O	O	O	O	Req(N)	L ●	O	O	O	O	L ⊙	O	S +	L +	S ⊙	O	L +
New construction at Range 27	I	O	S ⊙	O	S ⊙	O	O	O	O	O	O	Req(N)	O	L ⊙	S ⊙	S ⊙	O	O	O	S +	L +	O	O	L +
FOX Vehicle Swim Area and Organizational Parking (P-34)	D	O	S ⊙	S ⊙	O	O	O	O	O	O	O	Req(N)	O	O	O	O	O	O	O	S +	L +	S ⊙	O	L +
Overlay at TA 250	I	O	S ⊙	O	S ⊙	O	O	O	O	O	O	Req(N)	O	O	O	S ⊙	O	O	O	S +	L +	O	O	L +
Gas (Tear) Chamber (P-31)	D	O	S ⊙	S ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	S +	L +	S ⊙	O	L +
New construction at TA 101	I	O	S ⊙	O	S ⊙	O	O	O	O	O	O	O	O	O	O	S ⊙	O	O	O	S +	L +	O	O	L +
HMMWV Driving (P-35)	D	O	S ⊙	S ⊙	O	O	S ⊙	O	O	O	O	Req(N)	O	O	O	O	O	O	O	S +	L +	S ⊙	O	L +
New construction at TA 109A	I	O	S ⊙	O	S ⊙	O	O	O	O	O	O	Req(N)	O	O	O	S ⊙	O	O	O	S +	L +	O	O	L +
M60 Familiarization and Qualification (P-36)	D	O	S ⊙	S ⊙	O	O	S ⊙	O	O	O	O	Req(N)	O	O	O	O	O	L ⊙	O	S +	L +	S ⊙	O	L +
New construction/overlay at Range 18	I	O	S ⊙	O	S ⊙	O	O	O	O	O	O	Req(N)	O	L ⊙	O	S ⊙	O	O	O	S +	L +	O	O	L +
MK-19 Familiarization (P-47)	D	O	S ⊙	S ⊙	O	O	S ⊙	O	O	O	O	Req(N)	L ●	L ⊙	S ⊙	O	O	L ⊙	O	S +	L +	S ⊙	O	L +
New construction/overlay at Range 19	I	O	S ⊙	O	S ⊙	O	O	O	O	O	O	Req(N)	O	L ●	S ⊙	S ⊙	O	L ⊙	O	S +	L +	O	O	L +
MK-19 Qualification (P-48)	D	O	S ⊙	S ⊙	O	O	S ⊙	O	O	O	O	Req(N)	O	O	O	O	O	L ⊙	O	S +	L +	S ⊙	O	L +
New construction/overlay at Range 18	I	O	S ⊙	O	S ⊙	O	O	O	O	O	O	Req(N)	O	L ⊙	O	S ⊙	O	O	O	S +	L +	O	O	L +
Mobile Smoke Training	D	O	S ⊙	S ⊙	O	O	S ⊙	O	O	O	O	Req(N)	L ●	O	O	O	O	O	O	S +	L +	S ⊙	O	L +
Ballard Hollow (P-43)	I	O	S ⊙	O	S ⊙	O	O	O	O	O	O	Req(N)	O	O	O	S ⊙	O	O	O	S +	L +	O	O	L +
Mobile Smoke Training	D	O	S ⊙	S ⊙	O	O	O	O	O	O	O	Req(N)	L ●	O	O	O	O	O	O	S +	L +	S ⊙	O	L +
Musgrave Hollow (P-44)	I	O	S ⊙	O	S ⊙	O	O	O	O	O	O	Req(N)	O	O	O	S ⊙	O	O	O	S +	L +	O	O	L +
Mobile Smoke Training	D	O	S ⊙	S ⊙	O	O	S ⊙	O	O	O	O	Req(N)	L ●	O	O	O	O	L ⊙	O	S +	L +	S ⊙	O	L +
Bailey/McCann Hollow (P-45)	I	O	S ⊙	O	S ⊙	O	O	O	O	O	O	Req(N)	O	L ⊙	S ⊙	S ⊙	O	O	O	S +	L +	O	O	L +
Mobile Smoke Training	D	O	S ⊙	S ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	S +	L +	S ⊙	O	L +
Cannon Range (P-46)	I	O	S ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	S +	L +	O	O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 4 Facility Development Impacts - Army's Proposed LU & FP (Combined Headquarters and Instruction)	Direct/Indirect Impacts	Environmental Criteria																										Operational Efficiency
		Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	
NBC Training Area (P-39)	D	O	S ⊙	S ⊙	O	O	O	O	O	O	O	O	L ●	O	O	O	O	O	O	O	S +	L +	S ⊙	O	L +
New construction/overlay at TA 101	I	O	S ⊙		O	S ⊙	O	O	O	O	O	O	O	O	O	S ⊙	O	O	O	O	S +	L +		O	L +
Shotgun Familiarization and Qualification (P-40)	D	O	S ⊙	S ⊙	O		O	O	O	O	O	Req(N)	L ●	O	O	O	O	O	O	O	S +	L +	S ⊙	O	L +
New construction/overlay at Range 17	I	O	S ⊙		O	S ⊙	O	O	O	O	O	Req(N)	O	O	O	S ⊙	O	O	O	O	S +	L +		O	L +
Special Reaction Team Familiarization and Qualification (P-50)	D	O	S ⊙	S ⊙	O		L ⊙	O	O	O	O	Req(N)	O	O	O	O	O	O	O	O	S +	L +	S ⊙	O	L +
New construction/overlay at Range 15	I	O	S ⊙		O	S ⊙	O	O	O	O	O	Req(N)	O	O	O	S ⊙	O	O	O	O	S +	L +		O	L +
Special Reaction Team Marksman/Observer (P-49)	D	O	S ⊙	S ⊙	O		L ⊙	O	O	O	O	Req(N)	O	O	O	O	O	L ⊙	O	O	S +	L +	S ⊙	O	L +
New construction/overlay at Range 14	I	O	S ⊙		O	S ⊙	O	O	O	O	O	Req(N)	O	L ⊙	S ⊙	S ⊙	O	O	O	O	S +	L +		O	L +
Static Smoke Training (P-51)	D	O	S ⊙	S ⊙	O		L ⊙	O	O	O	O	Req(N)	L ●	O	O	O	O	O	O	O	S +	L +	S ⊙	O	L +
New construction at Range 30	I	O	S ⊙		O	S ⊙	O	O	O	O	O	Req(N)	O	O	O	S ⊙	O	O	O	O	S +	L +		O	L +
Relocate Range 29 to deconflict with Static Smoke Training (P-53)	D	O	S ⊙	S ⊙	O		L ⊙	O	O	O	O	Req(N)	O	O	O	O	O	O	O	O	S +	L +	S ⊙	O	L +
New construction/overlay at Range 4	I	L +	S ⊙		O	S ⊙	O	O	O	O	O	Req(N)	O	O	O	S ⊙	O	O	O	O	S +	L +		O	L +
Relocate Range 30 D/N to deconflict with Static Smoke Training (P-52)	D	O	S ⊙	S ⊙	O		L ⊙	O	O	O	O	Req(N)	O	O	O	O	O	O	O	O	S +	L +	S ⊙	O	L +
New construction at Range 11	I	L +	S ⊙		O	S ⊙	O	O	O	O	O	Req(N)	O	O	O	S ⊙	O	O	O	O	S +	L +		O	L +
Relocate Range 30 F to deconflict with Static Smoke Training (P-54)	D	O	S ⊙	S ⊙	O		L ⊙	O	O	O	O	Req(N)	O	O	O	O	O	O	O	O	S +	L +	S ⊙	O	L +
New construction at Range 6	I	L +	S ⊙		O	S ⊙	O	O	O	O	O	Req(N)	O	O	O	S ⊙	O	O	O	O	S +	L +		O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 4 Facility Development Impacts - Army's Proposed LU & FP (Combined Headquarters and Instruction)		Direct/Indirect Impacts	Environmental Criteria																								
			Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
	Range Control Addition and Classroom	D	O	O	O	O	O	O	O	O	O	O	O	L ●	O	O	O	O	O	O	O	O	O	O	O	L +
	new construction north of Range Control, and east of Obscurant Storage area near Range 30	I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +
	Vehicle Maintenance, non-cantonment (P-23)	D	O	S ⊙	S ⊙	O	L ⊙	O	O	O	O	O	Req(N)	L ●	O	O	O	O	O	O	O	S +	L +	S ⊙	O	L +
	new construction at Evasive Driving, TA 109A	I	O	S ⊙	O	S ⊙	O	O	O	O	O	O	Req(N)	O	O	O	S ⊙	O	O	O	O	S +	L +	O	O	L +
	Vehicle Parking, non-cantonment (P-25)	D	O	S ⊙	S ⊙	O	L ⊙	O	O	O	O	O	Req(N)	L ●	O	O	O	O	O	O	O	S +	L +	S ⊙	O	L +
	new construction at Evasive Driving, TA 109A	I	O	S ⊙	O	S ⊙	O	O	O	O	O	O	Req(N)	O	O	O	S ⊙	O	O	O	O	S +	L +	O	O	L +
8.0	**Convert Housing**																										
	UPH, Enlisted (renovation) (P-10)	D	O	O	S ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	S +	L +	S ⊙	O	L +
	600, 700, and 800 areas; and Specker Barracks	I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	S +	L +	O	O	L +
	UPH, Enlisted (conversion) (P-10a)	D	L +	O	S ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	S +	L +	S ⊙	O	L +
	Indiana Street Housing	I	L +	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	S +	L +	O	O	L +
	UPH, Officer (new)	D	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	not applicable	I	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	UPH, Officer (renovation) (P-15)	D	O	O	S ⊙	O	O	O	O	O	S +	O	O	O	O	O	O	O	O	O	O	S +	L +	S ⊙	O	L +
	Sturgis Heights UPH, Officer	I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	S +	L +	O	O	L +
	UPH, Officer (renovation) (P-15a)	D	L +	O	S ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	S +	L +	S ⊙	O	L +
	Indiana Street Housing	I	L +	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	S +	L +	O	O	L +
	Enlisted Dining (renovation) (P-12)	D	O	O	S ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	S +	L +	S ⊙	O	L +
	reactivation of dining facility at Specker Barracks	I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	S +	L +	O	O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 5
Facility Development Impacts - Alternative 1 LU & FP
(Combined Headquarters)

Impact Matrix 5
Facility Development Impacts - Alternative 1 LU & FP (Combined Headquarters)

		Direct/Indirect Impacts	Environmental Criteria																										Operational Efficiency
			Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	
1.0	**General Officer Quarters (1-14)**	D	O	S ⊙	S ⊙		O	O	O	O	O	O	O	L	●	O	O	O	O	O	S ⊙	S +	L +	S ⊙	O	O
	new construction northwest side of Piney Hills Drive	I	O	S ⊙		O	L ⊙	O	O	O	O	O	O		O	O	O	S ⊙	O	O		S +	L +		O	O	O
2.0	**Sixteen-Building Military Operations in Urbanized Terrain (MOUT) Facility (1-27)**	D	O	S ⊙	S ⊙		O	O	O	O	S +	O	O	L	●	O	O		O	O	S ⊙	S +		S ⊙	O	L ⊙
	renovation of WWII facilities near intersection of South Dakota and Indiana avenues	I	O	S ⊙		O	O	O	O	O	O	O	O		O	O	O	O	O	O		S +	O		O	O	L ⊙
3.0	**Chemical Defense Training Facility (1-28)**	D	O	S ⊙	S ⊙		O	O	S ⊙	S ⊙	O	O	Req(N)	L	●	O	O	O	L ⊙	O	S ⊙	S +	O	S ⊙	O	L +
	new construction near TA 236	I	S ⊙	S ⊙		O	L ⊙	O	O	S ⊙	O	O	Req(N)		O	L ⊙	O	S ⊙	O	O	O	S +	O		O	O	L +
4.0	**General Instruction Facility**																												
	Administration, Base Operations (1-1)	D	O	S ⊙	S ⊙		O	O	O	O	S +	O	O	O		O	O	O	O	O	O	S +	O	S ⊙	O	L ⊙
	conversion/renovation of 600 Area barracks	I	O	S ⊙		O	O	O	O	O	O	O	O	O		O	O	O	O	O	O	S +	O		O	O	L ⊙
	Administration, Chemical (1-2)	D	O	O		O	O	O	O	O	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	L +
	located in Lincoln and Hoge halls	I	O	O		O	O	O	O	O	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	L +
	Administration, 11th Chemical (1-10)	D	O	O		O	O	O	O	O	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	L +
	located in unit administration areas at Speaker Barracks	I	O	O		O	O	O	O	O	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	L +
	Administration, MP (1-16)	D	O	O		O	O	O	O	O	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	L +
	located in Lincoln and Hoge halls	I	O	O		O	O	O	O	O	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	L +
	Library, Chemical (1-5)	D	O	O		O	O	O	O	O	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	L +
	located in Clarke Hall	I	O	O		O	O	O	O	O	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	L +
	Library, MP (1-17)	D	O	O		O	O	O	O	O	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	L +
	located in Clarke Hall	I	O	O		O	O	O	O	O	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	L +
	Medical/Dental Base Operations (1-10)	D	O	O		O	O	O	O	O	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	L +
	located in Troop Medical and Dental Clinics, and General Leonard Wood Army Community Hospital	I	O	O		O	O	O	O	O	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 5
Facility Development Impacts - Alternative 1 LU & FP (Combined Headquarters)

		Direct/Indirect Impacts	Environmental Criteria																										
			Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
	NCO Instruction, Chemical (1-7)	D	O	S ⊙	O	O	O	O	O	O	S +	O	O	O	O	O	O	O	O	O	O	S +	O	O	O	L +
	conversion/renovation of 1000 Area barracks	I	O	S ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	S +	O	O	O	L +
	NCO Instruction, MP (1-19)	D	O	S ⊙	S ⊙	O	O	O	O	O	S +	O	O	O	O	O	O	O	O	O	S ⊙	S +	O	S ⊙	O	L +
	conversion/renovation of 1000 Area barracks	I	O	S ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	S +	O	O	O	L +
	Officer Instruction, Chemical (1-8)	D	O	S ⊙	S ⊙	O	O	O	S ●	O	O	O	Req(N)	O	O	O	O	L ⊙	O	S ⊙	S +	O	S ⊙	O	L +
	new construction north of Lincoln Hall	I	O	S ⊙	O	L ⊙	O	O	O	O	O	O	Req(N)	O	L ⊙	O	S ⊙	O	O	O	S +	O	O	O	L +
	Officer Instruction, MP (1-20)	D	O	S ⊙	S ⊙	O	O	O	S ●	O	S +	O	Req(N)	O	O	O	O	L ⊙	O	S ⊙	S +	O	S ⊙	O	L +
	new construction north of Lincoln Hall	I	O	S ⊙	O	L ⊙	O	O	O	O	O	O	Req(N)	O	L ⊙	O	S ⊙	O	O	O	S +	O	O	O	L +
	RADLAB (1-8)	D	L ⊙	S ⊙	S ⊙	O	O	O	S ●	O	O	O	Req(N)	O	O	O	O	O	O	S ⊙	S +	O	S ⊙	O	L +
	new construction north of Lincoln Hall	I	L ⊙	S ⊙	O	L ⊙	O	O	O	O	O	O	Req(N)	O	O	O	S ⊙	O	O	O	S +	O	O	O	L +
5.0	**Applied Instruction Facility**																												
	BIDS & FOX Maintenance (1-3)	D	O	S ⊙	S ⊙	O	O	O	S ⊙	O	O	O	Req(N)	L ●	O	O	O	O	O	O	S +	O	S ⊙	O	L +
	new construction south of 1000 Area and east of Artillery Circle	I	O	S ⊙	O	L ⊙	O	O	O	O	O	O	Req(N)	O	O	O	S ⊙	O	O	O	S +	O	O	O	L +
	BIDS & FOX Organizational Parking (1-4)	D	O	S ⊙	S ⊙	O	O	O	S ⊙	O	O	O	Req(N)	L ●	O	O	O	O	O	O	S +	O	S ⊙	O	L +
	new construction near Penn's Pond	I	O	S ⊙	O	L ⊙	O	O	O	O	O	O	Req(N)	O	O	O	S ⊙	O	O	O	S +	O	O	O	L +
	Museum, Chemical (1-6)	D	O	S ⊙	S ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	S +	O	S ⊙	O	L +
	new addition onto Walker Museum	I	O	S ⊙	O	L ⊙	O	O	O	O	O	O	O	O	O	O	S ⊙	O	O	O	S +	O	O	O	L +
	Museum, MP (1-18)	D	O	S ⊙	S ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	S +	O	S ⊙	O	L +
	new addition onto Walker Museum	I	O	S ⊙	O	L ⊙	O	O	O	O	O	O	O	O	O	O	S ⊙	O	O	O	S +	O	O	O	L +
	OSUT, Chemical (1-9)	D	O	S ⊙	S ⊙	O	O	O	S ⊙	O	O	O	Req(N)	L ●	O	O	O	O	L ⊙	O	S +	O	S ⊙	O	L +
	new construction south of 1000 Area and east of Artillery Circle	I	O	S ⊙	O	L ⊙	O	O	O	O	O	O	Req(N)	O	L ⊙	O	S ⊙	O	O	O	O	O	O	O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 5
Facility Development Impacts - Alternative 1 LU & FP (Combined Headquarters)

		Direct/Indirect Impacts	Environmental Criteria: Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
	OSUT, MP (1-21)	D	O	S ⊙	S ⊙		O	O	S ⊙	O	S +	O	Req(N)	O	O	O		O	L ⊙	O	O	S +	O	S ⊙	O	L +
	new construction near the intersection of Artillery Circle and West Twentieth Street	I	O	S ⊙		O	L ⊙	O	O	O	O	O	Req(N)	O	L ⊙	O	S ⊙		O	O	O	S +	O		O	L +
	Vehicle Maintenance, Cantonment (1-22)	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	Req(N)	O	O	O		O	O	O	O	S +	O	S ⊙	O	L +
	new construction near buildings 882 and 3000, and use available area near Building 5265 (DOL Maintenance)	I	O	S ⊙		O	L ⊙	O	O	O	O	O	Req(N)	O	O	O	S ⊙		O	O	O	S +	O		O	L +
	Vehicle Parking, Cantonment (1-24)	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	Req(N)	O	O	O		O	O	O	O	S +	O	S ⊙	O	L +
	new construction near buildings 882 and 3000, and use available area near Building 5265 (DOL Maintenance)	I	O	S ⊙		O	L ⊙	O	O	O	O	O	Req(N)	O	O	O	S ⊙		O	O	O	S +	O		O	L +
	Warehouse Storage (1-26)	D	O	S ⊙	S ⊙		O	O	O	O	O	O	Req(N)	L ●	O	O		O	O	O	O	S +	O	S ⊙	O	L +
	new construction near intersection of East Fourth Street and Louisiana Avenue	I	O	S ⊙		O	L ⊙	O	O	O	O	O	Req(N)	O	O	O	S ⊙		O	O	O	S +	O		O	L +
6.0	**Unaccompanied Personnel Housing**																									
	UPH, Enlisted (new) (1-11)	D	O	S ⊙	S ⊙		O	O	S ⊙	O	S +	O	Req(N)	L ●	O	O		O	L ⊙	O	O	S +	L +	S ⊙	O	L +
	new construction (1,750 spaces) located at two sites: south of 800 Area and south of Speacker Barracks	I	O	S ⊙		O	L ⊙	O	O	O	O	O	Req(N)		O	L ●	S ⊙	S ⊙		O	O	S +	L +		O	L +
	Enlisted Dining (new) (1-13)	D	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	not applicable	I	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
7.0	**Range Modifications**																									
	9mm Familiarization and Qualification (1-37)	D	O	S ⊙	S ⊙		O	O	O	O	O	O	Req(N)	O	O	O		O	O	O	O	S +	O	S ⊙	O	L +
	New construction/overlay at Range 13	I	O	S ⊙		O	S ⊙	O	O	O	O	O	Req(N)	O	O	O	S ⊙		O	O	O	S +	O		O	L +
	9mm Fire Arms Training Simulator (1-29)	D	O	S ⊙	S ⊙		O	O	O	O	O	O	O	L ●	O	O		O	O	O	O	S +	O	S ⊙	O	L +
	new construction at Range 17	I	O	S ⊙		O	S ⊙	O	O	O	O	O	O	O	O	O	S ⊙		O	O	O	S +	O		O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 5
Facility Development Impacts - Alternative 1 LU & FP (Combined Headquarters)

	Direct/Indirect Impacts	Environmental Criteria																										Operational Efficiency
		Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	
Base Recovery (1-30)	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	Req(N)		O	O	O		O	O	O	S +	O	S ⊙	O	L +
new construction at TA 109A	I	O	S ⊙		O	S ⊙	O		O	O	O	Req(N)		O	O	O	S ⊙	O	O	O	S +	O		O	L +
Combat Pistol Familiarization and Qualification (1-38)	D	O	S ⊙	S ⊙		O	O		O	O	O	Req(N)		O	O	O		O	O	O	S +	O	S ⊙	O	L +
new construction/overlay at Range 13	I	O	S ⊙		O	S ⊙	O		O	O	O	Req(N)		O	O	O	S ⊙	O	O	O	S +	O		O	L +
Evasive Driving (1-32)	D	O	S ⊙	S ⊙		O	O	S ⊙	S ⊙	O	O	Req(N)	L ●		O	O		L ⊙	O	O	S +	O	S ⊙	O	L +
new construction at TA 236	I	O	S ⊙		O	S ⊙	O		O	O	O	Req(N)		O	L ⊙	S ⊙	S ⊙	O	O	O	S +	O		O	L +
Expedient Mine Training Area (Flame Range) (1-33)	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	Req(N)	L ●		O	O		L ⊙	O	O	S +	O	S ⊙	O	L +
new construction at Range 27A	I	O	S ⊙		O	S ⊙	O		O	O	O	Req(N)		O	L ⊙	S ⊙	S ⊙	O	O	O	S +	O		O	L +
FOX Vehicle Swim Area and Organizational Parking (1-34)	D	O	S ⊙	S ⊙		O	O		O	O	O	Req(N)	L ●		O	O		O	O	O	S +	O	S ⊙	O	L +
new construction/overlay at Penn's Pond	I	O	S ⊙		O	S ⊙	O		O	O	O	Req(N)		O	O	O	S ⊙	O	O	O	S +	O		O	L +
Gas (Tear) Chamber (1-31)	D	O	S ⊙	S ⊙		O	O		O	O	O	Req(N)		O	O	O		O	O	O	S +	O	S ⊙	O	L +
new construction at TA 100	I	O	S ⊙		O	S ⊙	O		O	O	O	Req(N)		O	O	O	S ⊙	O	O	O	S +	O		O	L +
HMMWV Driving (1-35)	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	Req(N)	L ●		O	O		L ⊙	O	O	S +	O	S ⊙	O	L +
new construction at TA 236	I	O	S ⊙		O	S ⊙	O		O	O	O	Req(N)		O	L ⊙	S ⊙	S ⊙	O	O	O	S +	O		O	L +
M60 Familiarization and Qualification (1-36)	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	Req(N)		O	O	O		L ⊙	O	O	S +	O	S ⊙	O	L +
new construction/overlay at Range 27	I	O	S ⊙		O	S ⊙	O		O	O	O	Req(N)		O	L ⊙	S ⊙	S ⊙	O	O	O	S +	O		O	L +
MK-19 Familiarization (1-47)	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	Req(N)	L ●		O	O		L ⊙	O	O	S +	O	S ⊙	O	L +
new construction/overlay at Cannon Range	I	O	S ⊙		O	S ⊙	O		O	O	O	Req(N)		O	L ●	S ●	S ⊙	L ⊙	O	O	S +	O		O	L +
MK-19 Qualification (1-48)	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	Req(N)		O	O	O		L ⊙	O	O	S +	O	S ⊙	O	L +
new construction/overlay at Range 15	I	O	S ⊙		O	S ⊙	O		O	O	O	Req(N)		O	L ⊙	O	S ⊙	O	O	O	S +	O		O	L +
Mobile Smoke Training	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	Req(N)	L ●		O	O		O	O	O	S +	O	S ⊙	O	L +
new construction at Ballard Hollow (1-43)	I	O	S ⊙		O	S ⊙	O		O	O	O	Req(N)		O	O	S ⊙	S ⊙	O	O	O	S +	O		O	L +
Mobile Smoke Training	D	O	S ⊙	S ⊙		O	O		O	O	O	Req(N)	L ●		O	O		O	O	O	S +	O	S ⊙	O	L +
new construction at Musgrave Hollow (1-44)	I	O	S ⊙		O	S ⊙	O		O	O	O	Req(N)		O	O	O	S ⊙	O	O	O	S +	O		O	L +
Mobile Smoke Training	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	Req(N)		O	O	O		O	O	O	S +	O	S ⊙	O	L +
new construction at Babb Airfield (1-42)	I	O	S ⊙		O	S ⊙	O		O	O	O	Req(N)		O	O	O	S ⊙	O	O	O	S +	O		O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 5
Facility Development Impacts - Alternative 1 LU & FP (Combined Headquarters)

	Direct/Indirect Impacts	Environmental Criteria																								
		Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
Mobile Smoke Training	D	O	S ⊙	S ⊙		O	O	O	O	O	O	Req(N)	L ●		O	O	O	O	O	O	S +	O	S ⊙	O	L +
new construction Wolf Hollow (1-41)	I	O	S ⊙			O	O	O	O	O	O	Req(N)		O	O	O	O	O	O	O	S +	O		O	L +
NBC Training Area (1-39)	D	O	S ⊙	S ⊙		O	O	O	O	O	O	Req(N)	L ●		O	O	O	O	O	O	S +	O	S ⊙	O	L +
new construction/overlay at TA 100	I	O	S ⊙		S ⊙		O	O	O	O	O	Req(N)		O	O	O	S ⊙	O	O	O	S +	O		O	L +
Shotgun Familiarization and Qualification (1-40)	D	O	S ⊙	S ⊙		O	O	O	O	O	O	Req(N)		O	O	O	O	O	O	O	S +	O	S ⊙	O	L +
new construction/overlay at Range 13	I	O	S ⊙		S ⊙		O	O	O	O	O	Req(N)		O	O	O	S ⊙	O	O	O	S +	O		O	L +
Special Reaction Team Familiarization and Qualification (1-50)	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	Req(N)	L ●		O	O	O	O	O	O	S +	O	S ⊙	O	L +
new construction/overlay at Range 18A	I	O	S ⊙		S ⊙		O	O	O	O	O	Req(N)		O	O	O	S ⊙	O	O	O	S +	O		O	L +
Special Reaction Team Marksman/Observer (1-49)	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	Req(N)		O	O	O	O	L ⊙	O	O	S +	O	S ⊙	O	L +
new construction/overlay at Range 14	I	O	S ⊙		S ⊙		O	O	O	O	O	Req(N)		O	L ⊙	O	S ⊙	O	O	O	S +	O		O	L +
Static Smoke Training (1-51)	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	Req(N)		O	O	O	O	O	O	O	S +	O	S ⊙	O	L +
new construction at Range 29	I	O	S ⊙		S ⊙		O	O	O	O	O	Req(N)		O	O	O	S ⊙	O	O	O	S +	O		O	L +
Relocate Range 29 to deconflict with Static Smoke Training (1-53)	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	Req(N)		O	O	O	O	O	O	O	S +	O	S ⊙	O	L +
new construction/overlay at Range 4	I	O	S ⊙		S ⊙		O	O	O	O	O	Req(N)		O	O	O	S ⊙	O	O	O	S +	O		O	L +
Relocate Range 30 D/N to deconflict with Static Smoke Training (1-52)	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	Req(N)		O	O	O	O	O	O	O	S +	O	S ⊙	O	L +
new construction at Range 1	I	O	S ⊙		S ⊙		O	O	O	O	O	Req(N)		O	O	O	S ⊙	O	O	O	S +	O		O	L +
Relocate Range 30 F to deconflict with Static Smoke Training (1-54)	D	O	S ⊙	S ⊙		O	O	O	O	O	O	Req(N)		O	O	O	O	O	O	O	S +	O	S ⊙	O	L +
new construction at Range 30F	I	O	S ⊙		S ⊙		O	O	O	O	O	Req(N)		O	O	O	S ⊙	O	O	O	S +	O		O	L +
Range Control Addition and Classroom	D	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +
new construction north of Range Control	I	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 5 Facility Development Impacts - Alternative 1 LU & FP (Combined Headquarters)		Environmental Criteria																						
	Direct/Indirect Impacts	Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources • Floodplains/Surface Water	• Hydrology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources • Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
Vehicle Maintenance, non-cantonment (1-23)	D	O	S ⊙	S ⊙	O	O	O	O	O	O	Req(N)	L ●	O	O	O	O	O	O	S +	O	S ⊙	O	L +
new construction at Evasive Driving, TA 109A	I	O	S ⊙	O	S ⊙	O	O	O	O	O	Req(N)	O	O	O	S ⊙	O	O	O	S +	O	O	O	L +
Vehicle Parking, non-cantonment (1-25)	D	O	S ⊙	S ⊙	O	O	O	O	O	O	Req(N)	L ●	O	O	O	O	O	O	S +	O	S ⊙	O	L +
new construction at Evasive Driving, TA 109A	I	O	S ⊙	O	S ⊙	O	O	O	O	O	Req(N)	O	O	O	S ⊙	O	O	O	S +	O	O	O	L +
8.0 Convert Housing																								
UPH, Enlisted (renovation) (1-10)	D	O	O	S ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	S +	O	O	O	O
600, 700, 800, and 1000 areas; and Speacker Barracks	I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	S +	O	O	O	O
UPH, Enlisted (conversion) (P-10a)	D	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
not applicable	I	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
UPH, Officer (new) (P-15)	D	O	O	S ⊙	O	O	S ⊙	O	O	O	Req(N)	L ●	O	O	O	O	O	O	S +	L +	S ⊙	O	L +
new construction next to Morelli Heights	I	O	O	O	L ⊙	O	O	O	O	O	Req(N)	O	O	O	S ⊙	O	O	O	S +	L +	O	O	L +
UPH, Officer (renovation) (1-15)	D	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
not applicable	I	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
UPH, Officer (renovation) (1-15a)	D	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
not applicable	I	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Enlisted Dining (renovation) (1-12)	D	O	O	S ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
reactivation of dining facility at Specker Barracks	I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 6
Facility Development Impacts - Alternative 2 LU & FP
(Separate Headquarters)

Impact Matrix 6

Facility Development Impacts - Alternative 2 LU & FP (Separate Headquarters)

		Direct/Indirect Impacts	Environmental Criteria: Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
1.0	**General Officer Quarters (2-14)**	D	O	S ⊙	S ⊙		O	O	O	O	O	O	O	L ●		O	O		O	O	O	O	O	O	O	L +
	new construction northwest side of Piney Hills Drive	I	O	S ⊙		L ⊙		O	O	O	O	O	O		O	O	O	S ⊙		O	O	O	O	O	O	O	L +
2.0	**Sixteen-Building Military Operations in Urbanized Terrain (MOUT) Facility (2-27)**	D	O	S ⊙	S ⊙		O	O	S ⊙	S ⊙	O	O	Req(N)	L ●		O	O		O	O	O	O	O	O	O	L +
	new construction north of Babb Airfield	I	O	S ⊙		L ⊙		O	O	O	O	O	Req(N)		O	O	O	S ⊙		O	O	O	O	O	O	L +
3.0	**Chemical Defense Training Facility (2-28)**	D	O	S ⊙	S ⊙		O	O	S ●	S ⊙	O	O	Req(N)	L ●		O	O		O	L ⊙	O	O	O	O	O	O	L +
	new construction near TA 234	I	S ⊙	S ⊙		L ⊙		O		S ⊙	O	O	Req(N)		O	L ⊙	O	S ⊙		O	O	O	O	O	O	O	L +
4.0	**General Instruction Facility Administration, Base Operations (2-1)**	D	O	S ⊙	S ⊙		O	O	O	O	O	O	O	O	O	O	O		O	O	O	O	O	O	O	O	L +
	new construction north of Lincoln Hall	I	O	S ⊙		L ⊙		O	O	O	O	O	O	O	O	O	O	S ⊙		O	O	O	O	O	O	O	L +
	Administration, Chemical (2-2)	D	L +	S ⊙	S ⊙		O	O	S ⊙	O	O	O	Req(N)	L ●		O	O		O	L ⊙	O	O	O	O	O	O	L +
	new construction near Artillery Circle and Iowa Avenue	I	L +	S ⊙		L ⊙		O	O	O	O	O	Req(N)		O	L ⊙	O	S ⊙		O	O	O	O	O	O	O	L +
	Administration, 11th Chemical (2-10)	D	O	O	O		O	O	O	O	O	O	O	O	O	O	O		O	O	O	O	O	O	O	O	L +
	located in unit administration areas at Specker Barracks	I	O	O	O		O	O	O	O	O	O	O	O	O	O	O		O	O	O	O	O	O	O	O	L +
	Administration, MP (2-16)	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	Req(N)	O		O	O		O	L ⊙	O	O	O	O	O	O	O
	new construction near the intersection of South Dakota Avenue and West Nineteenth Street	I	O	S ⊙		L ⊙		O	O	O	O	O	Req(N)	O	L ⊙		O	S ⊙		O	O	O	O	O	O	O	O
	Library, Chemical (2-5)	D	L ⊙	S ⊙	S ⊙		O	O	O	O	O	O	Req(N)	O		O	O		O	O	O	O	O	O	O	O	L ⊙
	new construction near the intersection of Twentieth Avenue and Caission Drive	I	L ⊙	S ⊙		L ⊙		O	O	O	O	O	Req(N)	O		O	O	S ⊙		O	O	O	O	O	O	O	L ⊙
	Library, MP (2-17)	D	L ⊙	S ⊙	S ⊙		O	O	O	O	O	O	Req(N)	O		O	O		O	O	O	O	O	O	O	O	L ⊙
	new construction near the intersection of Twentieth Avenue and Caission Drive	I	L ⊙	S ⊙		L ⊙		O	O	O	O	O	Req(N)	O		O	O	S ⊙		O	O	O	O	O	O	O	L ⊙

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 6

Facility Development Impacts - Alternative 2 LU & FP (Separate Headquarters)

		Direct/Indirect Impacts	Environmental Criteria																							Operational Efficiency
			Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	
	Medical/Dental Base Operations (2-10)	D	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +
	located in Troop Medical and Dental Clinics, and General Leonard Wood Army Community Hospital	I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +
	NCO Instruction, Chemical (2-7)	D	O	O	O	O	O	O	O	O	S +	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L ⊙
	conversion/renovation of 1000 Area barracks	I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L ⊙
	NCO Instruction, MP (2-19)	D	O	O	O	O	O	O	O	O	S +	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	conversion/renovation of 1000 Area barracks	I	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	Officer Instruction, Chemical (2-8)	D	O	S ⊙	S ⊙	O	O	O	S ⊙	O	O	O	Req(N)	O	O	O	O	L ⊙	O	O	O	O	O	O	O	L +
	new construction near the intersection of Artillery Circle and Iowa Avenue	I	O	S ⊙	O	L ⊙	O	O	O	O	O	O	Req(N)	O	L ⊙	O	O	S ⊙	O	O	O	O	O	O	O	L +
	Officer Instruction, MP (2-20)	D	O	S ⊙	S ⊙	O	O	O	S ⊙	O	O	O	Req(N)	L ●	O	O	O	O	L ⊙	O	O	O	O	O	O	L +
	new construction near the intersection of South Dakota Avenue and West Nineteenth Street	I	O	S ⊙	O	L ⊙	O	O	O	O	O	O	Req(N)	O	L ⊙	O	O	S ⊙	O	O	O	O	O	O	O	L +
	RADLAB (2-8)	D	L ⊙	S ⊙	S ⊙	O	O	O	S ⊙	O	O	O	Req(N)	O	O	O	O	O	O	O	S ⊙	S +	O	S ⊙	O	L +
	new construction north of Lincoln Hall	I	L ⊙	S ⊙	O	L ⊙	O	O	O	O	O	O	Req(N)	O	O	O	O	S ⊙	O	O	O	S +	O	O	O	L +
5.0	**Applied Instruction Facility**																									
	BIDS & FOX Maintenance (2-3)	D	O	S ⊙	S ⊙	O	O	O	S ⊙	O	O	O	Req(N)	O	O	O	O	O	O	O	O	O	O	O	O	L +
	new construction south of 1000 Area and east of Artillery Circle	I	O	S ⊙	O	L ⊙	O	O	O	O	O	O	Req(N)	O	O	O	O	S ⊙	O	O	O	O	O	O	O	L +
	BIDS & FOX Organizational Parking (2-4)	D	O	S ⊙	S ⊙	O	O	O	O	O	O	O	O	L ●	O	O	O	O	O	O	O	O	O	O	O	L +
	new construction near Bloodland Lake	I	O	S ⊙	O	L ⊙	O	O	O	O	O	O	O	O	O	O	O	S ⊙	O	O	O	O	O	O	O	L +
	Museum, Chemical (2-6)	D	O	S ⊙	S ⊙	O	O	O	O	O	S +	O	O	O	O	O	O	O	O	L ⊙	O	O	O	O	O	L ⊙
	converted 1000 Area barracks	I	O	S ⊙	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L ⊙

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 6

Facility Development Impacts - Alternative 2 LU & FP (Separate Headquarters)

		Direct/Indirect Impacts	Environmental Criteria: Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
	Museum, MP (2-18)	D	O	S ⊙	S ⊙		O	O	O	O	S +	O	O	O		O	O	O	O	L ⊙	O	O	O	O	O	L ⊙
	converted 1000 Area barracks	I	O	S ⊙		O	O	O	O	O	O	O	O	O		O	O	O	O	O	O	O	O	O	O	L ⊙
	OSUT, Chemical (2-9)	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	Req(N)	O		O	O	O	L ⊙	O	O	O	O	O	O	L +
	new construction near the intersection of Albama Avenue and West Nineteenth Street	I	O	S ⊙		O	L ⊙	O	O	O	O	O	Req(N)	O		L ⊙	O	S ⊙		O	O	O	O	O	O	L +
	OSUT, MP (2-21)	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	Req(N)	L ●		O	O	O	L ⊙	O	O	O	O	O	O	L +
	new construction south of the 1000 Area and east of Artillery Circle	I	O	S ⊙		O	L ⊙	O	O	O	O	O	Req(N)	O		L ⊙	O	S ⊙		O	O	O	O	O	O	L +
	Vehicle Maintenance, Cantonment (2-22)	D	O		O		O	O	O	O	O	O	O	O		O	O	O	O	O	O	O	O	O	O	L +
	assign existing facility to 11th Chem Co, and use available area near Building 5265 (DOL Maintenance)	I	O		O		O	O	O	O	O	O	O	O		O	O	O	O	O	O	O	O	O	O	L +
	Vehicle Parking, Cantonment (2-24)	D	O		O		O	O	O	O	O	O	O	O		O	O	O	O	O	O	O	O	O	O	L +
	assign existing facility to 11th Chem Co, and use available area near Building 5265 (DOL Maintenance)	I	O		O		O	O	O	O	O	O	O	O		O	O	O	O	O	O	O	O	O	O	L +
	Warehouse Storage (2-26)	D	O	S ⊙	S ⊙		O	O	O	O	O	O	O	O		O	O	O	O	O	O	O	O	O	O	L +
	new construction near in 2300 Area, south of First Street, north of East Second Street, and between the rail tracks	I	O	S ⊙		O	L ⊙	O	O	O	O	O	O	O		O	O	S ⊙		O	O	O	O	O	O	L +
6.0	**Unaccompanied Personnel Housing**																									
	UPH, Enlisted (new) (2-11)	D	O	S ⊙	S ⊙		O	O	S ●	O	O	O	Req(N)	L ●		O	O	O	L ⊙	O	O	O	O	O	O	L +
	new construction (1,750 spaces) located south of Specker Barracks	I	O	S ⊙		O	L ⊙	O	O	O	O	O	Req(N)	O		L ⊙	S ⊙	S ⊙		O	O	O	O	O	O	L +
	Enlisted Dining (new) (2-13)	D	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	not applicable	I	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 6

Facility Development Impacts - Alternative 2 LU & FP (Separate Headquarters)

		Direct/Indirect Impacts	Environmental Criteria																							Operational Efficiency
			Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	
7.0	**Range Modifications**																									
	9mm Familiarization and Qualification (2-37)	D	O	S ⊙	S ⊙		O	O	O	O	O	O	Req(N)	O		O	O		O	O	O	O	O	O	O	L +
	New construction/overlay at Range 12	I	O	S ⊙		O	S ⊙	O	O	O	O	O	Req(N)	O		O	O	S ⊙	O	O	O	O	O	O	O	L +
	9mm Fire Arms Training Simulator (2-29)	D	O	S ⊙	S ⊙		O	O	O	O	O	O	O	O		O	O		O	O	O	O	O	O	O	L +
	new construction at Range 11	I	O	S ⊙		O	S ⊙	O	O	O	O	O	O	O		O	O	S ⊙	O	O	O	O	O	O	O	L +
	Base Recovery (2-30)	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	Req(N)	O		O	O		O	O	O	O	O	O	O	L +
	new construction at Babb Airfield	I	O	S ⊙		O	S ⊙	O	O	O	O	O	Req(N)	O		O	O	S ⊙	O	O	O	O	O	O	O	L +
	Combat Pistol Familiarization and Qualification (2-38)	D	O	S ⊙	S ⊙		O	O	O	O	O	O	Req(N)	O		O	O		O	O	O	O	O	O	O	L +
	new construction/overlay at Range 12	I	O	S ⊙		O	S ⊙	O	O	O	O	O	Req(N)	O		O	O	S ⊙	O	O	O	O	O	O	O	L +
	Evasive Driving (2-32)	D	O	S ⊙	S ⊙		O	O	S ●	S ⊙	O	O	Req(N)	L ●		O	O		O	L ⊙	O	O	O	O	O	O	L +
	new construction at TA 228	I	O	S ⊙		O	S ⊙	O	O	O	O	O	Req(N)		O	L ⊙	S ⊙	S ⊙	O		O	O	O	O	O	O	L +
	Expedient Mine Training Area (Flame Range) (2-33)	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	Req(N)	L ●		O	O		O	L ⊙	O	O	O	O	O	O	L +
	new construction at Range 24	I	O	S ⊙		O	S ⊙	O	O	O	O	O	Req(N)	O		L ●	S ⊙	S ⊙	O		O	O	O	O	O	O	L +
	FOX Vehicle Swim Area and Organizational Parking (2-34)	D	O	S ⊙	S ⊙		O	O	O	O	O	O	Req(N)	L ●		O	O		O	O	O	O	O	O	O	O	L +
	new construction/overlay at Bloodland Lake	I	O	S ⊙		O	S ⊙	O	O	O	O	O	Req(N)	O		O	O	S ⊙	O	O	O	O	O	O	O	O	L +
	Gas (Tear) Chamber (2-31)	D	O	S ⊙	S ⊙		O	O	O	O	O	O	O	O		O	O		O	O	O	O	O	O	O	O	L +
	new construction at TA 132	I	O	S ⊙		O	S ⊙	O	O	O	O	O	O	O		O	O	S ⊙	O	O	O	O	O	O	O	L +
	HMMWV Driving (2-35)	D	O	S ⊙	S ⊙		O	O	S ●	O	O	O	Req(N)	L ●		O	O		O	L ⊙	O	O	O	O	O	O	L +
	new construction at TA 228	I	O	S ⊙		O	S ⊙	O	O	O	O	O	Req(N)		O	L ⊙	S ⊙	S ⊙	O		O	O	O	O	O	O	L +
	M60 Familiarization and Qualification (2-36)	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	Req(N)	L ●		O	O		O	L ⊙	O	O	O	O	O	O	L +
	new construction/overlay at Range 14	I	O	S ⊙		O	S ⊙	O	O	O	O	O	Req(N)	O		L ⊙	O	S ⊙	O		O	O	O	O	O	O	L +
	MK-19 Familiarization (2-47)	D	O	S ⊙	S ⊙		O	O	S ●	O	O	O	Req(N)	L ●		L ⊙	S ⊙		O	L ⊙	O	O	O	O	O	O	L +
	new construction/overlay at Range 19	I	O	S ⊙		O	S ⊙	O	O	O	O	O	Req(N)	O		L ⊙	S ⊙	S ⊙	L ⊙		O	O	O	O	O	O	L +
	MK-19 Qualification (2-48)	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	Req(N)	O		O	O		O	L ⊙	O	O	O	O	O	O	L +
	new construction/overlay at Range 28	I	O	S ⊙		O	S ⊙	O	O	O	O	O	Req(N)	O		L ⊙	S ⊙	S ⊙	O		O	O	O	O	O	O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 6

Facility Development Impacts - Alternative 2 LU & FP (Separate Headquarters)

	Direct/Indirect Impacts	Environmental Criteria																												
		Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
Mobile Smoke Training	D	O	S ⊙	S ⊙		O	O	S ●	O	O	O	Req(N)	L ●		O	O		O	L ⊙	O	O	O	O	O	O	L +
new construction at Baily/McCann Hollow (2-45)	I	O	S ⊙		O	S ⊙	O		O	O	O	O	Req(N)		O	L ⊙	S ⊙	S ⊙		O	O	O	O	O	O	L +
Mobile Smoke Training	D	O	S ⊙	S ⊙		O	O		O	O	O	O	Req(N)	L ●		O		O		O	O	O	O	O	O	L +
new construction at Musgrave Hollow (2-44)	I	O	S ⊙		O	S ⊙	O		O	O	O	O	Req(N)		O	O	O	S ⊙	O	O	O	O	O	O	O	L +
Mobile Smoke Training	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	O	Req(N)		O	O		O	O	O	O	O	O	O	O	L +
new construction at Babb Airfield (2-42)	I	O	S ⊙		O	S ⊙	O		O	O	O	O	Req(N)		O	O	O	S ⊙	O	O	O	O	O	O	O	L +
Mobile Smoke Training	D	O	S ⊙	S ⊙		O	O		O	O	O	O	Req(N)	L ●		O		O	O	O	O	O	O	O	O	L +
new construction Wolf Hollow (2-41)	I	O	S ⊙		O	O	O		O	O	O	O	Req(N)		O	O	O	O	O	O	O	O	O	O	O	L +
NBC Training Area (2-39)	D	O	S ⊙	S ⊙		O	O		O	O	O	O	L ●		O	O		O	O	O	O	O	O	O	O	L +
new construction/overlay north of Range 1	I	O	S ⊙		O	S ⊙	O		O	O	O	O	O		O	O	O	S ⊙	O	O	O	O	O	O	O	L +
Shotgun Familiarization and Qualification (2-40)	D	O	S ⊙	S ⊙		O	O		O	O	O	O	Req(N)		O	O		O	O	O	O	O	O	O	O	L +
new construction/overlay at Range 12	I	O	S ⊙		O	S ⊙	O		O	O	O	O	Req(N)		O	O	O	S ⊙	O	O	O	O	O	O	O	L +
Special Reaction Team Familiarization and Qualification (2-50)	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	O	Req(N)	L ●		O		O	O	O	O	O	O	O	O	L +
new construction/overlay at Range 18A	I	O	S ⊙		O	S ⊙	O		O	O	O	O	Req(N)		O	O	O	S ⊙	O	O	O	O	O	O	O	L +
Special Reaction Team Marksman/Observer (2-49)	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	O	Req(N)		O	O		O	L ⊙	O	O	O	O	O	O	L +
new construction/overlay at Range 1	I	O	S ⊙		O	S ⊙	O		O	O	O	O	Req(N)		O	S ⊙	O	S ⊙		O	O	O	O	O	O	L +
Static Smoke Training (2-51)	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	O	Req(N)		O	O		O	O	O	O	O	O	O	O	L +
new construction at Range 30	I	O	S ⊙		O	S ⊙	O		O	O	O	O	Req(N)		O	O	O	S ⊙	O	O	O	O	O	O	O	L +
Relocate Range 29 to deconflict with Static Smoke Training (2-53)	D	O	S ⊙	S ⊙		O	O		O	O	O	O	n/a		O	O		O	O	O	O	O	O	O	O	L +
new construction/overlay at Range 29	I	O	S ⊙		O	S ⊙	O		O	O	O	O	n/a		O	O	O	S ⊙	O	O	O	O	O	O	O	L +

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Impact Matrix 6

Facility Development Impacts - Alternative 2 LU & FP (Separate Headquarters)

		Direct/Indirect Impacts	Environmental Criteria																								
			Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
	Relocate Range 30 D/N to deconflict with Static Smoke Training (2-52)	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	Req(N)	O	O	O	O	L ⊙	O	O	O	O	O	O	L +
	new construction at Range 6	I	O	S ⊙	O	S ⊙		O	O	O	O	O	Req(N)	O	S ⊙	O	S ⊙	O	O	O	O	O	O	O	L +
	Relocate Range 30 F to deconflict with Static Smoke Training (2-54)	D	O	S ⊙	S ⊙	O		O	O	O	O	O	n/a	O	O	O	O	O	O	O	O	O	O	O	L +
	new construction at Range 30F	I	O	S ⊙	O	S ⊙		O	O	O	O	O	n/a	O	O	O	S ⊙	O	O	O	O	O	O	O	L +
	Range Control Addition and Classroom	D	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +
	new construction north of Range Control	I	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	L +
	Vehicle Maintenance, non-cantonment (2-23)	D	O	S ⊙	S ⊙	O		O	S ●	O	O	O	Req(N)	L ●	O	O	O	O	O	O	O	O	O	O	L +
	new construction at Evasive Driving, including a satilellite DOL Maint Fac at TA 109A	I	O	S ⊙	O	S ⊙		O	O	O	O	O	Req(N)	O	O	O	S ⊙	O	O	O	O	O	O	O	L +
	Vehicle Parking, non-cantonment (2-25)	D	⊙	S ⊙	S ⊙	O		O	S ●	O	O	O	Req(N)	L ●	O	O	O	O	O	O	O	O	O	O	L +
	new construction at Evasive Driving, including a satilellite DOL Maint Fac at TA 109A	I	O	S ⊙	O	S ⊙		O	O	O	O	O	Req(N)	O	O	O	S ⊙	O	O	O	O	O	O	O	L +
8.0	**Convert Housing**																										
	UPH, Enlisted (renovation) (2-10)	D	O	O	S ⊙	O		O	O	O	S +	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	600, 700, 800, and 1000 areas; and Specker Barracks	I	O	O	O	O		O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	UPH, Enlisted (conversion) (2-10a)	D	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	not applicable	I	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

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Impact Matrix 6

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	Direct/Indirect Impacts	Environmental Criteria																								
		Land Use & Training Areas	Air Quality & Climate	Noise	Water Resources	• Floodplains/Surface Water	• Hydrology/Groundwater	Geology and Soils	Infrastructure	Hazardous/Toxic Materials	Munitions	Permits/Regulatory Authority	Biological Resources	• Federal T & E Species[1]	• Other Protected Species	• Wetlands	• Aquatic Resources	• Terrestrial Resources	Cultural Resources	Sociological Environment	Economic Development	Quality of Life	• Human Health and Safety	Installation Agreements	Operational Efficiency
UPH, Officer (new) (2-15)	D	O	S ⊙	S ⊙		O	O	S ⊙	O	O	O	Req(N)	L ●	O	O	O	O	O	O	O	O	O	O	O	
new construction near Sturgis Heights	I	O	S ⊙		O	L ⊙	O	O	O	O	O	Req(N)	O	O	O	O	S ⊙	O	O	O	O	O	O	O	
UPH, Officer (renovation) (2-15)	D	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
not applicable	I	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
UPH, Officer (renovation) (2-15a)	D	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
not applicable	I	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Enlisted Dining (renovation) (2-12)	D	O	S ⊙	S ⊙		O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
reactivation of dining facility at Specker Barracks	I	O	S ⊙		O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O

Note: 1 Significance of impacts to T&E species was assessed per 40 CFR 1508.27. Significant adverse impacts denoted for T&E species reflect "may affect" findings in the BRAC-related Biological Assessment.

Part 2:
Review Comments and Responses

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Part 2: Review Comments and Responses

II.4 INTRODUCTION

II.4.1 Public Review and Comment Period

The Notice of Availability (NOA) for the Draft EIS was published on October 11, 1996. The NOA initiated a 45-day public review and comment period which extended through November 25, 1996.

II.4.2 Public Hearing

A public hearing was held on November 14, 1996. The public hearing was held in two parts including an open house meeting conducted on the afternoon of November 14, and a formal public hearing conducted on the evening of the same date.

II.5 REVIEW COMMENTS AND RESPONSES

All verbal and written comments received at the Public Hearing, and all other written comments received during the 45-day comment period (October 11 through November 25) have been incorporated in this Volume, and considered in the development of the Final EIS. This subsection includes: 1) a transcript of the public hearing, 2) copies of written comments received from federal, state and local agencies, 3) copies of written comments received from interest groups, 4) copies of written comments received from individuals, and 5) a response to each substantive comment.

Each issue identified has been noted with a line and reference number in the margin on the comment page. For example, U.S. EPA's first issue is referenced as F-USEPA.01. Each set of comments is followed by responses that are keyed to the issue reference numbers. Where appropriate, the responses indicate what portion(s) of the FEIS have been modified or expanded to address the comment.

Transcript of Public Hearing

(TRANS.XX)

TRANSCRIPT

OF

PUBLIC HEARING

DRAFT ENVIRONMENTAL IMPACT STATEMENT

(DRAFT EIS)

FOR THE

REALIGNMENT OF THE

U.S. ARMY CHEMICAL SCHOOL

AND

U.S. ARMY MILITARY POLICE SCHOOL

TO

FORT LEONARD WOOD, MISSOURI

THURSDAY, NOVEMBER 14, 1996

7:00 P.M.

WAYNESVILLE PUBLIC HIGH SCHOOL

PARKER FINE ARTS CENTER

LTC JOHN A. DURKIN: Ladies and gentlemen, may I have your attention, please? It's now a little past seven p.m. and I would like to call this meeting to order. My name is Lieutenant Colonel John Durkin. I'm the Director of the Fort Leonard Wood BRAC Transition Office. On behalf of the Fort Leonard Wood Installation Commander, Major General Clair Gill, and the Department of the Army, I would like to welcome you to this public hearing.

We have divided this meeting into five parts. After my welcoming comments, we will discuss the meeting registration process, provide an overview of the Draft EIS, and explain how we will--how we will receive your comments tonight. These first four sections will take about forty-five minutes. After these presentations, we will open the floor to receive your comments on the Draft EIS.

I'm sure that many of you attended a scoping meeting that we held in the library and cafeteria of this high school in November of 1995 to announce our plans to prepare an Environmental Impact Statement, or EIS as we will--we will refer to it tonight, to evaluate the relocation of the U.S. Army Chemical School and the Military Police School to Fort Leonard Wood.

That meeting was held to notify you of that study effort, and to listen to your comments regarding issues that should be considered. For those of you who are

interested, you will find a summary of the major concerns and issues that were brought to our attention at the November 1995 meeting in Section 1 of the Draft EIS.

Since the November '95 scoping meeting, considerable work has gone into the preparation of a Draft EIS with--with the goal of answering the questions that were raised during the scoping process. Now that the draft is available, we are again assembled to provide you with an overview of that document, and to listen to your comments so that they may be entered into the record and considered by the Department of the Army as they prepare the Final EIS.

There are a number of people here tonight that have been very involved in the preparation of the Draft EIS, and I'd like to recognize some of these individuals.

Up here on the stage with me tonight is Mr. David Taylor of the U.S. Army Training and Doctrine Command, or TRADOC, which is located at Fort Monroe, Virginia. Mr. Taylor is the Chief of the TRADOC Base Realignment and Closure, or BRAC, Office. TRADOC is the Army's major command which has overall responsibility for Fort Leonard Wood operations.

Next I'd like to introduce Ms. Emily Brown, who's in the front row here. Emily is an environmental specialist that works with me at the Fort Leonard Wood BRAC

Transition Office. She has played a key role in the development of the Draft EIS and related studies.

Right next to Emily is Mr. Alan Gehrt. Mr. Gehrt is an environmental specialist with the Kansas City District Corps of Engineers. The Kansas City District is responsible for directing the contracts required to support BRAC planning and design actions at Fort Leonard Wood. Al has served as the District's project manager for completing the Draft EIS and related studies. He is also the designated point of contact for receipt of written comments on the Draft EIS.

I would like to thank each of you for making the effort to attend this hearing, particularly in view of the bad weather out there. Please be assured that all of your comments will be carefully considered by the Army and our EIS team as we move forward with the preparation of the Final EIS.

And now I take pleasure in introducing our hearing officer for this meeting, Professor Richard Tyler. Richard is a Professor of Law at the University of Missouri-Columbia. He has not been involved in the preparation of the Draft EIS for Fort Leonard Wood, but he is experienced in conducting EIS public hearings, and we appreciate having him here to assist us with this meeting tonight. Professor Tyler.

[Applause.]

PROFESSOR TYLER: Thank you, Colonel Durkin. Good evening, ladies and gentlemen. Let me begin with some administrative matters. First, I would remind you that smoking is not permitted in this building. There are also rest rooms and water fountains across the hall in the lobby area, and please feel free to use them as needed during the evening.

Now, as you came into the Open House earlier today, or the meeting this evening, you were asked to fill out a registration card. And we did this for two reasons. First is so we could have a record of those in attendance, so we can keep you informed of the progress of the EIS. Second, we would like to identify persons who would like to make a statement for the record at this hearing. If you did not fill out a registration card, and you would like to do so, please raise your hand so we can get one to you at this time.

I'd also like to inform you that the entire meeting is being recorded and a transcript will be prepared and become part of the official record for the EIS.

Now, as Colonel Durkin mentioned, before we open the floor for comments, we're going to provide you with an overview of the EIS, and that will take about thirty-five minutes. The--I would like to introduce next Mr. Robert

Bax. Mr. Bax is a Vice President with the Saint Louis-based firm of Harland Bartholomew & Associates, or HBA. HBA is under contract with the Kansas City District Corps of Engineers to prepare the EIS, and Mr. Bax has served as the firm's Project Manager for the study. Mr. Bax.

[Applause.]

MR. ROBERT BAX: Thank you, Professor Tyler, and good evening. Good evening, ladies and gentlemen. The relocation of the Chemical School and the Military Police School to Fort Leonard Wood represents an extensive action. Accordingly, the Draft EIS is a large and complex document. My goal tonight is to provide you with an overview of the format of the Draft EIS and some of the major conclusions presented in that study.

Recent BRAC decisions have been made by a bipartisan Commission acting in accordance with the Defense Base Closure and Realignment Act of 1990, or Public Law 101-510.

In 1995, the Commission recommended that--that Fort McClellan, Alabama, be closed, and that the U.S. Army Chemical School and Military Police School be relocated to Fort Leonard Wood. This recommendation was accepted by the President and Congress and must be implemented by the Army. The Commission recommendation also stated that the Chemical Defense Training Facility, which is used to support part of

the Chemical School training mission, would continue to operate at Fort McClellan until a replacement facility is provided at Fort Leonard Wood.

In reviewing the Draft EIS, it's important to understand that Public Law 101-510 requires the Army to close Fort McClellan, Alabama, and to relocate these schools to Fort Leonard Wood. Therefore, the Draft EIS focuses on identifying and evaluating the alternative ways to implement this action at Fort Leonard Wood.

Pursuant to the National Environmental Policy Act, or NEPA, and its implementing regulations, the Army has prepared a Draft EIS that addresses the environmental and socioeconomic impacts of locating these schools at Fort Leonard Wood. This action is required to comply with the 1990 Base Closure Act, and to continue the essential mission functions of both schools.

As shown on this overall schedule for implementing BRAC 95 actions at Fort Leonard Wood, work began on the EIS in September of 1995. Current plans call for completing the relocation of both schools to Fort Leonard Wood by October of 1999.

This slide provides additional detail regarding the schedule for completing the EIS. The second bar on the chart, which is shown in yellow, illustrates the forty-five-day public review and comment period on the Draft EIS,

which extends from October 11th through November 25th. The Army's goal is to complete the EIS during the second quarter of 1997, which translates to a total preparation time of about one and a half years.

Circulation of the draft and extensive public and agency notification was initiated on October 7th. Our initial distribution included agencies, special interest groups, and citizens who provided major scoping comments or that requested a copy. In addition, a complete copy of the Draft EIS and related appendices and support studies have been placed in various libraries to provide an opportunity for all interested persons to review the information.

A Notice of Availability was published by both the Army and EPA in the Federal Register on October 11th. This marked the start of the forty-five-day public comment period; and the same Notice of Availability was published in nine separate newspapers.

We also conducted open--conducted an Open House meeting from four p.m. to six p.m. this afternoon. The Open House was designed to provide an opportunity for the public to review the Draft and related studies and to discuss it with EIS team members and Army representatives.

The study process has included several items to help keep the public informed, and for the Army to gain a better understanding of issues that are important to the

public.

The EIS formally began with the publication of a Notice of Intent to prepare the document on September 22nd, 1995, and a public scoping meeting was held during the early stages of the project.

Our team developed a mailing list of persons who expressed interest in Fort Leonard Wood activities in the past, and this list currently includes over eight hundred individuals and organizations. It has been--helped to notify the public of the actions relating to this study, including tonight's meeting.

We also sent out two newsletters to all persons on the mailing list between the scoping meeting and the release of the Draft EIS, and the installation has conducted two sets of Town Hall Meetings, at various locations, to provide information on the status of BRAC planning activities.

We have also conducted working meetings with state and federal agencies, and groups that have expressed interest in the--in the action.

We're currently near the middle of the public comment period on the Draft EIS. Please note that all comments must be postmarked no later than November 25th, 1996, to ensure that they are considered in the Final EIS.

If you have not had an opportunity to review or

study the Draft EIS and wish to do so, you can view the document and all--and all major supporting studies at the libraries shown on this slide.

Libraries in this region include the Clarke Engineer School Library at Fort Leonard Wood and public--public libraries in Waynesville, Lebanon, Rolla, Springfield, and Houston, Missouri. In addition, the Draft EIS is available in main libraries in Saint Louis and Kansas City, Missouri, and in the Fisher Library at Fort McClellan, Alabama.

Several documents have been prepared to support the analysis and conclusions presented in the Draft EIS. These supplemental studies have also been included in each of the libraries I just reviewed. They include an analysis of human health risks associated with proposed fog oil training; a biological assessment and two ecological risk assessments that evaluate the impact of BRAC activities on federally listed threatened and endangered species that are known to occur at Fort Leonard Wood; and a study to identify the potential for long-term impacts of fog oil training on plants, soil, water, and animals at Fort McClellan in Alabama, so that that information could be used to help predict impacts of fog oil training at Fort Leonard Wood.

The Draft EIS includes a total of four volumes.

Volume I presents the main body of the EIS and includes an Executive Summary, a description of the proposed action and related alternatives, and a detailed discussion of the impacts of each alternative. Volume II presents a series of charts that provide a graphic summary of the impacts described in Volume I. We recommend using these two volumes together when reviewing the impact analysis of the EIS.

Volumes III and IV provide a variety of background and supporting information, with emphasis on documenting all aspects of the proposed action and detailed--the detailed process that we used to develop the alternatives considered in the EIS.

A review of the Draft will also indicate that the proposed action and related implementation alternatives have been presented under three primary elements, including the relocation of training missions associated with the two schools; provision of a wide range of facilities, including buildings and training range improvements that are required to support the relocated missions; and relocation of military and civilian population associated with the schools and supporting units to Fort Leonard Wood.

Each of these elements has been described in detail in the Draft EIS and related appendices to make sure

that the public and review agencies are fully informed of all aspects of the planned action.

The EIS considered the No Action Alternative which is generally required by NEPA. The document concludes that the No Action Alternative is not reasonable in this case, since BRAC law mandates that these schools be relocated to Fort Leonard Wood. However, under the No Action Alternative, the installation would continue operations as they existed at the time the BRAC decision was announced. These existing conditions define the environmental baseline that is used to identify impacts of planned BRAC actions.

The document then presents three alternatives for implementing required training activities. These three training alternatives are referenced as the Relocate Current Practice, or RCP Alternative; the Optimum Training Method, or OPTM Alternative; and the Environmentally Preferred Training Method, or EPTM Alternative.

The Draft EIS also identifies three alternative Land Use and Facility Plans that could be used to meet the building and other facility requirements of the schools. Each of these alternatives uses some combination of existing surplus facilities at Fort Leonard Wood, in association with facility improvements and new construction projects.

Finally, the Draft EIS considers alternatives relating to transferring the military and civilian population associated with the planned action. Since the number and type of personnel to move are identical in any implementation scenario, the EIS team considered the potential for changing the timing of this move.

Ultimately, it was concluded that the only reasonable alternative for this element of the action is to phase the relocation of these persons to Fort Leonard Wood over a period of time, based on the completion of courses at Fort McClellan and the availability of replacement facilities at Fort Leonard Wood, as various construction projects are completed.

Regarding the population to move to Fort Leonard Wood as a result of BRAC actions and other ongoing realignments, it's significant to note the trends shown in this simple chart.

The installation supported a total population of about thirty-two thousand persons in 1990. It reached a low of about twenty-one thousand persons in 1995, as a result of ongoing downsizing actions and a reduction in the number of students to be trained.

As shown on the chart, the Fort Leonard Wood population is expected to be about thirty-five thousand persons after the total BRAC realignment has been

implemented in 1999. This is approximately three thousand persons higher than the 1990 population level, which represents a net gain of about ten percent.

Before I move into a discussion of the impacts of the Army's Proposed Action, I would like to highlight some of the major differences among the alternatives presented in the Draft EIS. First, let's look at the training alternatives.

As shown on this slide, there are major differences in the quantity of fog oil to be used, ranging from a high of 125,000 gallons per year under the Relocate Current Practice Alternative, to 84,500 for the Army's Proposed Action, to a low of 49,500 gallons per year under the Environmentally Preferred Training Method.

There is also a significant reduction in the amount of fuel to be used for Flame Field Expedient Training, with a requirement to use nine hundred gallons per training event under the RCP Alternative, versus a reduction to five hundred and fifty gallons per event under the Army's Proposed, or OPTM and the EPTM Alternatives.

I'd also like to point out that under the RCP Alternative, all decontaminated wastes generated by the operation of the Chemical Defense Training Facility, or CDTF, would be disposed of in a Thermal Treatment Unit to be constructed and operated on Fort Leonard Wood property.

In contrast, under both the OPTM and the EPTM alternatives, all decontaminated wastes generated by the CDTF would be disposed of off-post, through the use--use of licensed contractors.

Additional details regarding the differences among the three training implementation alternatives are provided in the Draft EIS.

A review of the Draft will also indicate substantial differences among the three Land Use and Facility Plan alternatives that were analyzed. In general, the Army's Proposed Action would result in the location of new administrative, classroom, and support facilities for officer and noncommissioned officer training within walking distance of the existing Engineer Center, or Lincoln Hall, at Fort Leonard Wood.

Land Use and Facility Plan Alternative 1 would be similar to the Army's Proposed Action, in that it would also locate new administrative facilities adjacent to Lincoln Hall. However, separate remote complexes would be developed to support officer and noncommissioned officer classroom facilities and various support facilities, which would require students to use vehicles to move between these various use areas.

Land Use and Facility Plan Alternative 2 would locate new administrative facilities and renovated

classrooms at the south end of the cantonment, and support facilities would also be disbursed under this alternative. The alternative would also increase the need for vehicular transportation between various activities.

Additional details regarding differences among the three construction program alternatives, including differences in the siting of remote training range activities, is provided in the Draft EIS.

Now I'd like to turn your attention to the impact analysis component of the Draft EIS. The Draft describes the existing or affected environment at Fort Leonard Wood in the context of fifteen categories, as shown on this slide. These same categories, plus a sixteenth category which considers the operational efficiency and training effectiveness of alternative actions, are used to organize the discussion of impacts presented in Section 5 of the Draft.

Before I move into a discussion of impacts, it is important to note that many of the key impact analysis procedures that--have been based on conservative analysis assumptions. What I mean by conservative is that methods have been selected to overstate impacts rather than understate them.

This conservative analysis approach is particularly evident in the air emission and dispersion

modeling of proposed fog oil training; secondly, in the risk assessment that evaluates potential impacts of proposed actions on human health and threatened and endangered species; and, third, in the analysis of impacts relating to the proposed flame training range.

The computer model that was selected to evaluate fog oil dispersion and concentrations represents one example of this conservative approach. Specifically, that model assumes that the terrain is perfectly flat and that the wind will blow continuously in the same direction over the total time that fog oil is generated. In addition, the key studies relating to fog oil have used highly conservative assumptions regarding the time and concentration of potential exposures. These assumptions result in overestimating both the distance that the fog oil cloud is likely to travel, as well as the density of the cloud.

I'm going to use my remaining time to provide you with an overview of the impacts that are expected to occur under each of the sixteen evaluation categories, if the Army implements their Proposed Action, as identified in the Draft EIS.

As I go through these remaining slides, please keep in mind that I'm only providing an overview, and that I'm only addressing the impacts of the Army's Proposed

Action package. This proposed action package includes implementation of the Optimum Training Method Alternative, the Army's Proposed Land Use and Facility Plan, and the Phased Relocation of related military and civilian population.

For those of you who are interested in more details, and a detailed comparison of the impacts between the Army's Proposed Action and the other alternatives evaluated, I encourage you to review the Draft EIS and various supporting studies.

Let's start with the first analysis category, which considers the impacts of the Army's Proposed Action on existing land use patterns. The Draft EIS concludes that the Proposed Action will only require minor changes to the installation's existing approved land use plan. The most significant change will involve the establishment of a 300-meter restricted entry zone around the new Chemical Defense Training Facility, which would be located approximately one mile west of the Fort Leonard Wood airfield.

The Draft EIS explains that the Army's Proposed Action for fog oil training is based on a maximum annual use level that exceeds the limits established in the current air quality permit that has been granted by the State of Missouri. However, the proposed annual fog oil

use level is shown to be well within the limits of applicable national air quality standards.

Regarding the Army's proposed maximum daily use levels, the EIS documents that the Army's proposed fog oil training would exceed both the level established in the existing state permit, and applicable national air quality standards. These conclusions are based on the conservative models and assumptions used in the Draft EIS that I mentioned before.

The EIS goes on to explain that the increase in the Army's proposed fog oil use levels is needed to support training for reserve units that were not identified when data was gathered for the initial permit application. After these higher use levels were identified during the initial stages of the EIS, it was determined that the impact analysis should be based on those levels to accurately predict potential impacts to air quality, as well as human health and other components of the environment.

Given these findings, the Draft EIS concludes that proposed fog oil training has the potential to have a significant adverse impact on air quality, and states that this impact would need to be reduced or mitigated to nonsignificant levels prior to full implementation of that portion of the proposed action.

A new air quality permit is required under any circumstances, since the current permit only extends into 1997, which is approximately two years prior to scheduled implementation of fog oil training at the installation in 1999. The Army is proceeding with additional studies at this time relating to fog oil use at Fort Leonard Wood in support of the application to renew the existing air quality permit.

These additional studies will provide site-specific meteorological data within and around Fort Leonard Wood area and detailed evaluation of other computer models that can account for terrain features and weather conditions that actually occur in the project area. This additional information will be used to support the required permit renewal process, which will occur in 1997. It is anticipated that these additional studies may result in the ability to increase fog oil usage to the levels identified under the Army's Proposed Action without causing significant air quality impacts.

However, please let me stress that the Draft EIS clearly states that the Army will limit fog oil use to the levels specified in the permit that is applicable at the time the training occurs.

The Draft concludes that all other proposed actions will generate emissions that are not expected to

result in any significant adverse impacts to local or regional air quality. Finally, regarding air quality, it should be noted that under the Army's Proposed Action, decontaminated wastes generated by the planned Chemical Defense Training Facility will be disposed of off-post through the use of licensed waste contractors. Therefore, the CDTF facility would not require the construction or operation of a Thermal Treatment Unit, as originally planned and currently permitted. This approach eliminates any concern regarding air emissions from such a unit.

The Draft EIS concludes that the addition of the Chemical School and the Military Police School to Fort Leonard Wood is not expected to cause any significant increase in noise levels outside of the installation boundaries.

With regard to water resources, the Draft concludes that the Army's Proposed Flame Field training activities have the potential to cause a significant adverse impact to groundwater and surface water resources, both within and around the flame training site. This impact would be caused by the release of unburned fuel during flame training detonation that could contaminate water resources if not mitigated.

The Draft identifies several measures to be included in the design and construction of this range to

reduce these potential impacts. These design features include construction of earth berms around the site to minimize surface water flow onto and off of the training area. In addition, a liner, similar to those used in modern landfills, would be installed under the total flame training site to prevent fuel from contaminating groundwater. Finally, clay-lined ponds would be provided to capture surface water flow within the flame range area.

The Draft concludes that all other proposed actions, including the use of fog oil at the levels proposed by the Army, would not have a significant adverse impact on water resources within or beyond the installation boundaries.

Similar to the impacts to water resources, the Draft identifies the potential for a significant adverse impact to geologic and soil resources. This impact is also related to the proposed flame training range. However, the same mitigation measures that I just discussed under water resources will ensure that impacts are restricted to the disturbed area within the boundaries of the flame range. No other significant adverse impacts to geologic or soil resources are anticipated as a result of all the other proposed activities.

The Draft EIS notes that under the Army's Proposed Action, there will be a need to extend utilities

to the new CDTF and Military Operations in Urban Terrain facilities, or MOUT facilities, and to improve some roadway intersections near the existing U.S. Army Engineer School. The existing major infrastructure systems that are in place at Fort Leonard Wood, including the water and wastewater plants, are capable of meeting all requirements without any expansion or modifications.

The Draft concludes that the proposed BRAC actions will result in an increase in the transportation, storage, and use of hazardous materials, such as paints, thinners, solvents, petroleum products, and radiological isotopes that are used to support installation operations and training activities. The EIS documents that byproducts resulting from the use of these materials will be disposed of off-post through the continued use of existing approved procedures and agreements with licensed contractors.

In addition, operation of the Chemical Defense Training Facility will require the mixing and use of small quantities of toxic agents within a highly controlled interior environment. Operation of the CDTF will result in the production of both liquid and solid wastes that have been decontaminated or neutralized to eliminate any threat of toxic agent contamination.

These decontaminated byproducts are classified under Missouri regulations as special wastes. Special

wastes are generally defined by the State of Missouri as wastes that do not meet the definition of hazardous waste but, by their characteristics, require additional handling when compared to municipal, construction, or general yard wastes.

Under the Army's Proposed Action, all decontaminated wastes relating to the CDTF would be disposed of off-post through new agreements with licensed commercial contractors. Although the CDTF waste byproducts are not classified as hazardous, the Army commits to handling them as such in the Draft EIS, to provide an additional measure of protection to the public and the environment.

The wastes to be disposed of would be subject to routine testing to ensure that they meet disposal specifications, and the transport and disposal of all such waste will be tracked and documented from the time it leaves Fort Leonard Wood to the time and location of final disposal. These records will be maintained and available for inspection by appropriate regulatory agencies. Based on that approach, the Draft EIS concludes that the off-site disposal of CDTF waste byproducts will not result in a significant adverse impact to the environment of persons within or beyond the installation boundaries.

The Draft documents that the total quantity of

munitions to be used at Fort Leonard Wood will increase as a result of proposed actions. However, no significant adverse impacts are expected as a result of that increase.

The Draft also identifies permitting actions that will be required prior to implementing the proposed BRAC actions. As stated under the discussion of air quality, implementation of the Army's Proposed Action for fog oil training would require pursuit and approval of a revised air quality permit from the State of Missouri. In addition, the Army also needs to obtain site-specific stormwater or wetland permits for certain elements of the proposed facility construction program.

The Draft and supporting documents conclude that certain proposed training and facility construction activities result in what is referred to as a "May Effect" finding to the three federally listed threatened and endangered species that are known to occur in and around Fort Leonard Wood. These species include the Indiana Bat, the gray bat, and the American bald eagle.

A detailed Biological Assessment has been prepared to evaluate the potential impacts of the proposed action on these species, and formal consultation with the U.S. Fish and Wildlife Service has been initiated. Based on this process, we anticipate that conservation measures will be required to comply with the Endangered Species Act.

The Draft EIS explains the status of ongoing consultations with the Fish and Wildlife Service, the anticipated timing of the release of their Biological Opinion, and the type of conservation measures that are likely to be included in the Final EIS and the Record of Decision.

In addition, the Draft concludes the implementation--that--that implementation of proposed BRAC actions at Fort Leonard Wood will have an adverse impact to other protected species that could occur at the installation as a result of the loss and degradation of existing habitat.

The EIS summarizes the extensive cultural resource studies that have been conducted at Leonard Wood to identify all significant archaeologic and historic resources. The impact analysis for this resource element concludes that implementation of the action will not impact any significant cultural resources.

The study notes that there is likely to be a shortage of off-post rental housing units to support workers during the BRAC facility construction period. In addition, the EIS indicates that there may be a need for up to 550 new off-post housing units to support military and civilian personnel that are expected to establish homes outside of Fort Leonard Wood boundaries.

The study identifies the type and extent of significant economic benefits that are expected to occur in the region as a result of the action. These beneficial impacts include both short-term gains associated with the BRAC construction program, as well as long-term gains in jobs and business revenues associated with increased population levels and a general increase in ongoing mission activities at Fort Leonard Wood.

The study evaluates the impact of all proposed activities on the health of persons living on the post at Fort Leonard Wood and beyond the post boundaries, and to those persons participating in training activities.

Regarding proposed fog oil training, the EIS concludes that sustained or long-term exposures to fog oil at very high concentrations, which is defined in the study as concentrations above five milligrams per meter cubed, may result in adverse impact to human health as a result of inhalation.

However, the EIS and supporting technical studies conclude that these concentrations will only occur within installation boundaries, and that any personnel exposed to these conditions will be protected from either short- or long-term adverse impacts through the use of respiratory masks, as required by the Army's existing Standard Operating Procedures for fog oil training.

The health analysis indicates that there will be no adverse impacts to persons within the installation cantonment area, or to persons around the installation boundaries or in the region as a whole. The complete rationale for these conclusions is fully documented in the Draft EIS and the referenced supporting studies conducted by the Army and by other parties.

Other training activities that have the potential to impact human health include the proposed flame range training, since uncontrolled flame range activities have the potential to impact water resources. However, the threat will be minimized through the implementation of maintenance of the protective measures, such as the berm and liner that I previously described.

In addition, the toxic agent training to occur at the CDTF has the potential to cause adverse impacts to the military staff that are directly involved in that training. These potential impacts are mitigated by providing extensive protective design features at the CDTF and operating controls that have been proven to be effective through ten years of incident-free operations at Fort McClellan.

Furthermore, the Draft EIS concludes that even under worst case scenarios, such as primary power system failure, fire, or disruption of the containment seal at the

CDTF, the release of agent would not be a threat to the health or safety of persons in the cantonment area or outside of the installation boundaries. This is due to the limited quantities of toxic agents to be stored at the facility, containment controls which include redundant backup systems, and the provision of a cleared restrictive zone around the facility.

The Draft concludes that the Proposed Action will require the preparation of some additional installation agreements. These actions are required to ensure various military organizations operate in an efficient and cooperative manner.

And, finally, the Draft EIS documents that implementation of the Army's Proposed Action will result in the highest level of operational efficiency and training effectiveness relative to--relative to any other combination of training, facility construction, and population relocation alternatives. Therefore, it is anticipated that implementation of the Army's Proposed Actions will result in soldiers that are more highly trained, and that have improved abilities to defend and protect our national interests.

I'd like to thank you for your attention tonight and return the floor to Professor Tyler. Thank you.

[Applause.]

PROFESSOR RICHARD TYLER: Thank you, Mr. Bax. And now we are at the main purpose of the meeting tonight, which is to listen to you and to document your comments for the record, and for consideration in preparation of the Final EIS. Before we begin, let me just highlight a couple of administrative matters.

Please be aware that all comments that are provided within the forty-five-day Draft EIS review period will be documented and considered, and that includes written comments provided here at this meeting; oral comments made here at this meeting; and any additional written comments which are postmarked before the close of the Draft EIS comment period to which Mr. Bax referred; i.e., November 25, 1996.

If you have a written statement, you may read it out loud, you may turn it in without reading it, or you can do both. In any case, your comments will become part of the record. If you do provide written comments, please be sure to include your name and address on them, so that we can make sure they are entered into the records properly.

When you speak tonight, please come forward to one of the microphones down on either side of the meeting room, so that you can be heard by the rest of the audience, and so that your comments can be recorded, because you see we have a stenographer here to record the official record

of this meeting.

Again, before you begin your comments, please provide us with your name and any organization which you are representing, so that we can enter that information into the record.

And in order to give everyone an opportunity to comment, we ask that you limit your comments to five minutes. We have a timer, which should be visible from your side, to help you keep track of your time. The timer will be green for the first four minutes. It will go to yellow or amber, caution, in the last minute, and then it will go red at the end of five minutes. And we ask that you terminate at that point, so that someone else can come forward.

Again, be aware that we're here tonight to receive your comments. If you ask questions as a part of your comments, they will be included in the public hearing record, they'll be answered as part of the Final EIS. We will not attempt to answer them here tonight.

We'll start by taking statements from those persons who indicated on the registration card that you wanted to make a comment, and we'll invite elected officials or their representatives to speak first, and then we'll call on other speakers in the general order in which we received their registration cards. After we receive

comments from anyone who registered to speak, we'll open the floor for anyone else who would like to comment.

If you do not have comments tonight, but you'd like to provide them at a later date, you may send your written comments to the Kansas City District, Corps of Engineers, prior to the comment closing date. The name and address of the person to send your comments to is provided on the comment sheets that were available at the registration table. If you need a copy, additional comment sheet forms will be available at the registration table when you leave this evening. Again, all written comments postmarked by November 25th, and all oral comments received tonight, will receive equal consideration in the preparation of the Final EIS.

Now, that's the end of our opening presentation. Could we bring the lights up and basically turn the projector off, I guess. We've got all the lights there are? Okay, thank you.

Let me open the floor to the first speaker, and the first speaker, I believe, is Mr. Bill Ransdall, the Mayor of Waynesville.

MAYOR BILL RANSDALL: Thank you for the opportunity to speak.

I've been involved with the Chemical and the MP School move since their conception, as well as I've

attended all of the hearings and briefings.

I feel the Army is very capable of preserving the environment and have confidence that the training involved with the moves will not have an adverse effect on the quality of life.

As Mayor of Waynesville, neither myself or City Hall has received any complaints or concerns involving the move and its effect. Therefore, I'm wholeheartedly endorsing the move of the Chemical and MP Schools from Fort McClellan to Fort Leonard Wood. Signed, Bill Ransdall, Mayor, City of Waynesville.

PROFESSOR RICHARD TYLER: Thank you. Next speaker, Mr. C. W. "Chuck" Plunkett from the Chamber of Commerce, Lebanon Chamber of Commerce.

MR. C. W. "CHUCK" PLUNKETT: Thank you, sir, for allowing me to make my comments at this point.

I've been very active at Fort Leonard Wood for the last fourteen years on behalf of the Lebanon Area Chamber of Commerce. In the last eight years, I'm almost in daily contact with the post. I worked five and a half years for a contractor in the maintenance facilities.

I have observed, over this period of years, that the Army and the people at Fort Leonard Wood have done an outstanding job of protecting the environment. In a few incidents where they've had a problem pop up, they

immediately took care of it, even if it meant working after hours.

But I think that you will find the Army's done an outstanding job, and I know that they will continue to do so, and on behalf of the Chamber of Commerce and the Mayor of Lebanon, we endorse this move.

Thank you.

PROFESSOR RICHARD TYLER: Thank you, sir. Next person who registered is Mr. Les Parker from Phillipsburg, Missouri.

MR. LES PARKER: I do live near Lebanon, but I don't speak for Lebanon.

I live out in a country area. I retired a few years ago. My name is Les Parker.

I commend the staff's preparation and presentation of displays for this meeting, which we could study before the meeting. These additions to Fort Leonard Wood--to Fort Leonard Wood's mission, I should say, should seem favorable, provided they undergo all the needed conservative safeguards for safety to the population and the environment.

Thank you.

PROFESSOR RICHARD TYLER: Thank you. Next person, Mr. Tom Sager of Rolla.

MR. TOM SAGER: My name is Tom Sager. I live in

Rolla, Missouri, some twenty-five, thirty miles up the road. I want to thank you all for having this meeting and for giving me permission to speak here.

I would like to talk a little bit about the nerve toxins that are proposed to be used at the chemical training facility. Nowhere in the draft EIS does it mention the toxicity of these. It's such that one drop of these substances, sarin and VX, can kill a person. TS. 1

The one quart that is proposed to be used at one time at the chemical training facility could kill upwards between a hundred thousand and a million people, which is more people than live in this area. TS. 2

To say, under these circumstances, that if the containment facility were breached, that it would not cause harm to people outside of it, to me is just absolutely ludicrous to say that. I--it would certainly be a major catastrophe if the containment facility were to be breached in any way at a time when there would be these nerve--nerve agents inside the facility. TS. 3

Now, I--I--I would like to say that there are alternatives. There has been experiments in testing with these highly toxic nerve agents going on in the--in desert areas for years. In fact, out in Dugway, Utah, they had one accident where a few gallons of it got away and traveled twenty-seven miles in the wind and then ended up

precipitating out and killing some six thousand sheep.

If something like that, even with a single quart or even a part of it, were to happen here, it would have devastating effects on this entire area.

I know that it would be expensive to ship people out to the desert to receive this training, but yet I feel it would be well worth the money spent. Consider that the military budget is over two hundred and sixty billion a year. Surely some of this could be spent to ship the trainees to an area away from human--human habitation for this kind of training with substances that are this toxic.

I would like to ask that the EIS consider this alternative, that the other kinds of training which do not involve toxic agents, perhaps they can be done safely here. But this one kind of training, I feel, is so fraught with possible hazards, and the hazards would be so great, that it should be done, if it's necessary to do it at all, in an area as far as possible from any human habitation.

And that's basically what I want to say and again I want to thank you for your permission to speak to you here.

PROFESSOR RICHARD TYLER: Thank you, sir. Next speaker, Mr. Troy Gordon, from Ozark Chapter, Sierra Club.

MR. TROY GORDON: Good evening. I am Troy Gordon. I'm a volunteer with the Ozark Chapter, Sierra

Club. And I also used to live a few miles east of here on the Little Piney River. And I must say, the Little Piney and Big Piney are beautiful rivers and beautiful resources that need to be protected.

I want to commend the Army and the contractors who worked to permit--to prepare this DEIS. They've made an effort to provide a thorough analysis, and I've talked to many of them, and I have no doubt that they are very sincere in their desire to want to protect the resources that are there, and I think I share with them many of the goals in preserving this area. TG. 1

Having said that, I must say the Sierra Club disagrees with the proposed decision-making process of the DEIS. The Army's proposed action is based on decision making for the optimal training method. Sierra Club ultimately would like to see that--the decision-making basis be the Environmental Preferred Training Method, or even more stringent in some instances. TG. 2

We note that, first of all, the most environmental and the most social--socially preferred alternative would be not to have a Chemical School at all, if it were not necessary. However, we realize that this alternative is outside the legal constraints, as the U.S. Congress has exempted the Department of Defense from some of the provisions of the National Environmental Policy Act,

including the need to consider a no-action alternative.

Within these constraints, what we now have is a document, albeit lengthy, but a document designed to justify the decision-making process, which has already--and the decision which has already been made.

Sad to say, it would seem we are just wasting our time here tonight. We cannot stop the speeding train that has already left the station.

However, having said that, a more optimistic view is that perhaps by participating in this process we can impact and have a positive influence on the decision making that is to occur.

Sierra Club recognizes that our concerns are not held by many people in this area. I heard someone say earlier tonight that they weren't sure that we represented the views of people here or their interests. Although I would remind you I used to live in this area, and the reason why I left was because I couldn't find a decent job, so I know that this area needs economic development.

However, I would say that the economic development that this--the moving of the Chemical School here, would be economic development at the expense of the environment, and that is not sound fiscal policy.

It has been said that each day this project is delayed, it costs a hundred thousand dollars. I would

challenge the government to take five days of that and spend half a million dollars on promoting economic development in this area, rather than for moving the Chemical School.

I'm not going to try and analyze the documents tonight, there is not time in five minutes. And, frankly, I'm not a chemist, I'm not an engineer, and I'm not a biologist. I can't do it.

Sierra Club does have volunteers, scientists who are doing this analysis. However, it does not take a rocket scientist to know that polluting the air and the water is bad. Sierra Club does have a rocket scientist helping us with this analysis and, sure enough, he does say polluting the air and water, it's bad.

Sierra Club has requested an extension of the time for comments. However, we've not yet received a response. The reason why is our scientists are volunteers, and these volunteers have full-time jobs. This is something they're doing on the side, without getting paid for it. There's a huge volume of very technical material, and it's hard to wade through in forty-five days.

Sierra Club would like our comments to be substantive, to raise issues of concern now so that they can be addressed in the final Environmental Impact Statement. To do that, we ask--we must have more time.

Sierra Club will prepare written comments. We hope an extension is granted so we can have that full review. TG 3

I want to thank you for the opportunity to speak tonight, and I apologize for being unable to address the DEIS in a substantive manner now. Again, we do--again, we do appreciate the professionalism and concern of the officials preparing the DEIS, even though we may disagree with the content and the decision-making process.

Thank you.

PROFESSOR RICHARD TYLER: Thank you, sir. The next speaker is Kay Drey from University City, representing Missouri Coalition for the Environment.

MS. KAY DREY: Thank you. My name is Kay Drey. Is this on? I live in University City, and I'm speaking on behalf of the Missouri Coalition for the Environment.

The true topic of tonight's public hearing is jobs, not the environment.

According to medieval German legend, Faust was a magician who sold his soul to the Devil in exchange for knowledge and power. The Army has laid a Faustian bargain before the communities surrounding Fort Leonard Wood. Either you accept nerve gas, chemical weapons, live biological agents, and radioactive waste, or Fort Leonard Wood will be shut down forever.

Saint Louis' daily newspaper has not told its public much about this deal and about the hazards involved, even though, as Saint Louisans, we live only about a hundred miles away, and even though many of us love the woods and streams of the Ozarks as much as the people who live here do.

I do not know how much information the daily newspapers in Waynesville, Rolla, and Lebanon have reported about the potential environmental impacts, but my guess is not much.

I only know that, according to the federal and state documents I have read, the proposed relocation of the Army Chemical School from Alabama to Missouri would bring with it not just jobs, but also great risk.

Risk assessment and risk communication are favorite new--new buzzwords of chemical manufacturers and others who negotiate with communities to get them to accept the construction or operation of various hazardous facilities. I think Rolla and Waynesville have been persuaded by the risk peddlers to accept a facility with potential hazards that we already know about, but also with hazards that the Army may not yet have recognized, or is not admitting. KD. 1

In the most recent Disabled American Veterans magazine, the DAV Executive Director said the following

about the belated release of information about the chemical weapons that were stored in an Iraqi ammunition depot destroyed by U.S. troops in March 1991 at the end of Operation Desert Storm. Quote, "The DAV immediately called for Congressional hearings to find out just what our government knew and why, after five years, we're just now hearing about incidents like this and the implications for the many veterans suffering from unexplained illnesses known as the Gulf War Syndrome."

The DAV's National Commander called it either, quotes, "A tragic blunder, or part of a deliberate cover-up."

Recalling the toxicity of the many chemicals that will be brought to or generated at Fort Wood, the Army has been using hexachloroethane at Fort McClellan as the base for its smoke pots and smoke grenade systems, as obscurants to conceal or screen the movement of troops and vehicles. KI 2

It turns out that hexachloroethane is extremely toxic. I brought along a copy of a U.S. Public Health Service report, which I have in my hands, published in 1994, that describes the facts known about the chemical's toxicity, and lists other studies not yet performed.

Hexachloroethane is so toxic that OSHA, the U.S. Occupational Safety and Health Administration, sets the permissible exposure level for a worker at only ten

milligrams per cubic meter in the workplace atmosphere. The standards are more strict for hexachloroethane than for ammonia, benzene, carbon monoxide, chloroform, and others.

How ironic that we should hide our friendly forces in a cloud of toxic chemicals. And, depending upon weather conditions, the fog oil fall-out and run-off can affect wide areas beyond the base.

In order to reduce the impact of fog oil on humans, fish, and wildlife in the surrounding communities, the Army has announced in the Draft EIS that it is in the process of converting its smoke systems from a hexachloroethane base to terephthalic acid.

KD. 3

To my amazement, I've just learned that, according to the current OSHA values, terephthalic acid has the identical permissible exposure level for a threshold limit value as hexachloroethane. That is, the Army is replacing the initial chemical, hexachloroethane, with a chemical that is equally highly toxic.

My concerns include both the human and health environmental impacts the Army has told us about, but also the many unknowns.

According to a letter I received from the Missouri Department of Natural Resources dated October 25th, Fort Wood will possess only, quotes, "...very small quantities of nerve agents for use in training soldiers.

True, the training exercises will use live nerve agents. However, this training is conducted within a highly specialized building with numerous safeguards in place to ensure that the nerve agents cannot escape," end quote.

PROFESSOR RICHARD TYLER: Can you please----

MS. KAY DREY: I do not believe--I'm sorry.

PROFESSOR RICHARD TYLER: Can you please wrap up now?

MS. KAY DREY: Okay. Well, I--I talk about the fact that you're not real sure about how much of the fog oil you're going to use and that this is like letting the camel's nose under the tent. Once the federal foot is in the door, the state will not only be unable to close the door, but I believe the state will not even know what is going on behind the door. KD 4

And I think that--I guess I--I was going to talk about incinerators and whether or not you will have incinerators here, and the questions we have before the courts about--and before the Clean Air Commission, about the permits. KD 5

I suspect it is easier and more expedient for the Army to claim for now----

UNKNOWN SPECTATOR: Next, please.

MS. KAY DREY: ----that incinerators will not be used, a prediction we probably all hope will hold true.

UNKNOWN SPECTATOR: Next, please.

PROFESSOR RICHARD TYLER: Ma'am, can you--you can leave your--your comments in writing.

MS. KAY DREY: Okay. I'll--I'll type them and submit them. Thank you.

PROFESSOR RICHARD TYLER: Thank you. Next speaker, Mr. Rick LaMonica.

MR. RICK LAMONICA: I missed the opportunity to go to several similar type hearings and I really think they make a lot of income for consulting firms. But usually by the time the public gets--the decisions are already made. And I really don't think that the Army is really open to any criticism of their plans.

The way I was told in talking to people in the other room, this base relocation is a done deal.

If the Army does need a chemical warfare school, I think at least they should consider their environmentally preferred training method. It seems like what they're doing is all the reports justifying what the Army wants to do in the first place.

The other thing I'm not quite sure of is whether they're really going to have an incinerator to treat the waste. If they're moving it off-site, what--what guarantee do we have that wherever they treat it off-site is going to be any better than having an incinerator on Fort Leonard

RL. 1

RL. 2

Wood?

And, since the military has been one of the largest generators of toxic waste and contaminated bases throughout the country, what guarantee do we have that we're not going to be left with another superfund site at Fort Leonard Wood somewhere down the road?

RI 3

Thank you.

PROFESSOR RICHARD TYLER: Thank you, sir. Mr. Charles Hamilton, Waynesville,

MR. CHARLES D. HAMILTON: Thank you for the opportunity to speak tonight. We appreciate, as a community, we appreciate your thinking enough of us, and considering our feelings, to present the presentation you have tonight, and all the exhibits across the hall.

Having lived in this community since 1959, sure you've heard of an accident or two in training, be it rifle training or whatever. But the rifle training that was going on surely saved thousands of lives by proper training.

In the manufacture of gasoline or chemicals or nuclear power or whatever, sure there's an accident once in a while. But is not the offset worth it?

We have a small accident, a gasoline spill, somebody has a problem. But look at all the millions of gallons of gasoline manufactured and the benefits derived

from that.

It's--it's a fact that there are seven hundred farm fatalities every year. But do you quit making corn? No, we keep on making corn. We keep on growing--growing our vegetables. We have to do these things.

There's such a thing as risk management. I think the Army is very good at this. I spent two years in the Army and I heard safety, safety, safety. You can't even pick up a hammer or a wrench without training and know what you're going to do with it. Safety is--is preached every day from every angle.

And speaking for ninety-nine percent of the thinking people in Waynesville/Saint Robert, Pulaski County, and Missouri, I want to thank you all for being in this community. If there were no economic benefit at all anyway, I would still feel good to think that military people receive training that might have saved their lives, and they received that training near my home town.

Thank you very much.

PROFESSOR RICHARD TYLER: Thank you, sir. Mr. James Nyberg from Clayton.

MR. JAMES NYBERG: I'm James Nyberg, from Clayton, Missouri, and I am an active member of the Missouri Coalition for the Environment, and Sierra Club, and some other organizations. Do you propose to answer any

questions verbally this evening?

PROFESSOR RICHARD TYLER: No, sir. But they'll go on the record and be addressed in the final----

MR. JAMES NYBERG: I'll--I'll submit a list of questions. And, just to summarize here, I'd like to express my concern about the potentially harmful materials that leave the premises, or will leave Fort Leonard Wood, by various means, such as water run-off, groundwater, air, hauled out by truck.

Each of these materials, like water or chemicals, nerve agents, anything that could be harmful to the public, I'd like to know how each of these will be decontaminated or contained before they leave. What happens in the case of an accident, such as spillage from a water containment basin or an accident at a storage facility? JN 1 JN 2

I'd like to know what chemical or biological analysis has been done on these so we would have some confidence in the knowledge of the products and how these will be controlled after they leave Fort Leonard Wood; for example, if they're hauled away, are they going out of public control forever, or what would happen? JN 3 JN 4

I'd also be interested in how much material is this compared to the amount of hazardous materials currently in the environment in Missouri? Would this double it or triple or quintuple it? How does this compare JN 5

with the materials load that we're handling now?

And, finally, for each of these subjects, I'd like to know how much of this is based on--or whether you intend to do the same procedures at Fort Leonard Wood that you've been doing at Fort McClellan so that we would have some confidence in your knowledge and experience of the procedure. In each case, if you plan to do something, do it different, we'd like to know about that, so that we can have a better view of what might happen.

JN. 6

Thank you.

PROFESSOR RICHARD TYLER: Thank you, sir. Next card I have is Mr. Frank Jones III.

MR. FRANK JONES III: Thank you, Colonel. Ladies and Gentlemen, my name is Frank Jones. I've served for the past eight years as the President of the Pulaski County Landowners Association, and represent its membership tonight.

On behalf of the membership of the Pulaski County Landowners Association, I would like to reiterate and confirm our support for the move of the Army's Chemical Weapons Training School to Fort Leonard Wood.

Despite all the noise and hoopla, we have seen no evidence whatsoever that this move would in any way affect the health and well-being of the people of this area, or have any effect on property values beyond possible

enhancement due to the increased economic activity as a result of the move.

We note that the opponents of the move have not seen fit, in the past, to decry this activity in its present location, where there doesn't seem to be any apparent environmental damage but, instead, have raised objection only when infused with funds from economic interests that stand to lose business because of the move.

The main organizations objecting to the move, the Coalition for the Environment and the Saint Louis Chapter of the Sierra Club, were the same ones who sponsored and promulgated the old scenic rivers proposals and the nefarious Natural Streams Act of years past. Any points raised by them or objections made by them, in our view, should be considered with that history in mind.

Their relationship to the people of this area has only been--and landowners in particular--has only been confrontational and adversarial at best. They have not had the best interest of the people of this area at heart in the past, and we doubt very much that they do now.

It's interesting to note that despite all the emphasis on possible potential pollution made by these opponents, the largest point source of stream pollution in the State of Missouri remains the metropolitan Sewer District of Saint Louis, to which both the Coalition and

the Saint Louis Chapter of the Sierra Club happily contribute without any objection whatsoever.

We again reiterate and confirm our support for the move. It's advantages are many and, in our view, can only bring enhancement to our area.

A great many of our members, myself included, have served in the military, and some are now employed by the military in some capacity. We would tend, in matters of military actions on military bases, to trust the judgment of military authorities far more than the judgment of the Sierra Club or the Coalition, whose past campaigns of lies and misinformation we recall with bitter experience.

Thank you for the opportunity to comment and let the move go forward. You have our support.

[Applause.]

PROFESSOR RICHARD TYLER: Thank you, sir. Next Mr. Fred Wellhausen.

MR. FRED WELLHAUSEN: Gentlemen, my name is Fred Wellhausen, and I represent the Pulaski County Board of Realtors. The Board of Realtors are in agreement with the move to Fort Leonard Wood, and we wholeheartedly support it.

Myself, having served in the military and in the civilian community, and being a member of the community and

a landowner, I have to say that I have knowledge that Fort Leonard Wood has worked continuously, and when I was here from the seventies with the state Department of Conservation and Natural Resources, to keep Fort Leonard Wood streams open. They're some of the finest in the state, some of the best white bass fishing in the country. Trout. Hunters from Kansas City and Saint Louis come down to hunt here on Fort Leonard Wood because it's the finest areas.

As far as nerve agents and--and the chemicals, I think your study has--has done well to show that you will contaminate--or contain and decontaminate if there is any problems.

I attended the CBR course and I went through the nerve agents, and it didn't hurt me. I'm here. And I think our soldiers need the best training they can get. Of all the training I went through in the military, it--there was nothing that compared to a combat zone.

So we need the best that we can have, and I think Fort Leonard Wood and the command and staff at Fort Leonard Wood will do everything humanly possible to keep our environment the way it is.

And as far as jobs go, I think some of the people are just speculating a little too high on jobs. There's going to be a lot of relocation from the other--other bases

here. We're going to get some construction work. And--but where we'll see the economic development in our community is in goods and services. I don't think we'll see an influx of five hundred new jobs.

Anyway, we're in favor of it and in total support and we'll do anything we can to back you on it.

Thank you.

PROFESSOR RICHARD TYLER: Mr. Michael Dunbar.

MR. MICHAEL DUNBAR: Good evening. My name is Michael Dunbar. I live at 106 Lasalle Drive, Waynesville, Missouri. I'm here on behalf of the Committee of Fifty as their Chairman, also on behalf of the United Methodist Church here in Waynesville, as Chairman of the Administrative Council.

I've--I've been involved with this move and with the studies that have been going on with the Army and this BRAC move since its inception. I can't think of many meetings that I've not been in attendance. I cannot think of many times that the questions that our community has had of the Army that have gone unanswered.

The Army's primary focus in any training they do is for the safety of its soldiers, safety of the environment, and safety of the community around the area.

The Army has done one of the most in-depth studies that I think anyone could ever hopefully have done.

They've considered all the options, they've considered the impact on the environment, and, more importantly, they've considered the impact on individuals and our families in this community.

I believe that they've addressed all the concerns that need be addressed. I believe that they have considered all safety issues. I believe they've kept the best interests of our community in mind, along with the individuals that live in this community.

I support the move. I know the community supports the move, and we welcome the move. Thank you.

PROFESSOR RICHARD TYLER: Thank you, sir. It's V. Flanigan. I'm not sure if it's Mr. or Mrs. Mr. Flanigan.

DR. VIRGIL FLANIGAN: Good evening. I'm Doctor Virgil Flanigan. I'm a professor of mechanical engineering and senior researcher at the Center for Environmental Science and Technology at the University of Missouri-Rolla, and I'll read this, otherwise I'll--I'll drift off. I'm a professor, so you've got to kind of keep me grounded.

I have worked with the engineering group from Fort Leonard Wood for the past twenty years. We have worked on many problems, including environmental systems. I believe the groups to be well trained and competent. I believe they are good stewards and would address any

existing or rising problems. With the experience and confidence that I have in these people, I recommend the move and the development of Fort Leonard Wood.

And I'd also like to say that I'm a rocket scientist.

Thank you.

[Applause.]

PROFESSOR RICHARD TYLER: Thank you, Mr. Flanigan. The last card I have is from Mr. Tim Barrier.

MR. TIM BARRIER: Hello. My name is Tim Barrier, and I represent the--I'm the President of the Chamber of Commerce for the Waynesville and Saint Robert area, and I appreciate the opportunity to be able to speak with you this evening.

Once again, I've been to a lot of the briefings since the BRAC issue had come up on the move from Fort McClellan to Fort Leonard Wood, and been involved in a lot of information that's been distributed. I feel that the military has done the extensive study that's necessary to--to protect our environment and bring about a safety throughout.

We've had no calls that has come into our office from either our membership, which is over two hundred and fifty members, or anybody that has concerned themselves to push the issue forward.

On a little personal note, my father was in the military for twenty-three years, and never once did I ever feel that the military purposely jeopardized his life. I always felt that the military gave him the necessary training to protect himself and the troops, and I think that training needs to continue.

We support the move.

PROFESSOR RICHARD TYLER: Thank you, sir. Those are all the persons who had indicated on the registration cards that they would like to make oral comments this evening. Is there anyone else that would like to speak? Again, the same ground rules. Five minutes, and please come forward and state your name. Ms. Drey, would you like to make some more comments?

MS. KAY DREY: I don't want to keep people beyond----

MR. ROBERT B. BAX: You're welcome to. The only reason we set the time constraint was just to make sure that everybody had equal time. If--if you would like to complete your comments, you can. Or, keep in mind that your full written ones will receive equal consideration, so just wanted to provide the opportunity.

MS. KAY DREY: I'd be happy to read some more. I worked on it.

MR. ROBERT B BAX: Understood, and that's why

we----

MS. KAY DREY: I'm not sure where I stopped. Sorry, I wasn't expecting----

MR. ROBERT B. BAX: That's all right.

MS. KAY DREY: A lot of people who opposed the Natural Streams Act are wishing today that it'd passed.

I do not believe that the Missouri Department of Natural Resources can accurately predict today the amount of nerve agents that will be stored or used or ultimately stockpiled at Fort Wood. The quantities of chemicals listed in the Draft EIS are described as approximate and are merely estimates. They can be changed and, in fact, are already being changed, before construction of the Army Chemical School has even begun. KD. 6

The Missouri DNR and the Air Conservation Commission rushed through the permit process, issued a variance on a nonexisting facility, this variance was later set aside by the circuit court, and the DNR performed various other shenanigans to try to justify the issuance of permission to the Army to release sixty-five thousand gallons per year of fog oil, which is more than the existing state regulations would have allowed. KD. 7

Now the Army says it wants to release even more, eighty-four thousand five hundred gallons. And, in fact, in Volume I of the Draft EIS, the Army acknowledges that it

had, quote, "erroneously omitted the Army Reserve personnel portion of fog oil training," end quote, and that the annual amount of fog oil it might want to use could be up to one hundred and twenty-five thousand five hundred gallons, or twice the currently permitted amount.

Not only can the state DNR not predict with any assurance the amounts of chemicals, but I also believe they cannot predict where or how the chemical, nerve gas, and live biological agent training and maneuvers will be conducted. KI 8

Perhaps initially the exercises will be restricted to the interiors of sealed buildings and laboratories. But admitting the Army Chemical School into our state is like letting the camel's nose under the tent.

Once the federal foot is in the door, the state will not only be able to close the door--unable to close the door, but I believe the state will not even know what is going on behind the door; that is, on the base.

The federal government will not be required to inform the state about changes. National security precautions will preclude that. For example, we may never find out whether GB sarin nerve gas is manufactured off base and transported into Missouri--excuse me, I have to find--or whether it's going to be manufactured on base. K 9 K 1

I think it is very significant that the Army is

currently authorized to manufacture nerve gas at Fort McClellan, and that in fact Fort McClellan is the only institution in the world legally licensed to manufacture sarin nerve gas. KD. 11

As we learned at the time of the Tokyo subway attack last year, inhaling one drop of sarin nerve gas can be lethal. The state cannot accurately predict the quantities to be used or the ultimate disposition of the biological, chemical, nerve, or radioactive waste. KD. 12

In some parts of the Draft EIS, it is suggested that incinerators may be used. And elsewhere it says they won't be. I do not believe the Army really knows at this time. The decision may depend upon the pending litigation about the state air permits. KD. 13

If the Army were ever to prepare a dispersion model of the materials released into the air, using a combination of the estimated incinerator emissions plus fog oil emissions, the results would likely indicate that the current allowable limits would be exceeded. KD. 14

I suspect it is easier and more expedient for the Army to claim for now that incinerators will not be used, a prediction we probably all hope will hold true.

Incinerators do disperse toxic materials, and current monitoring technologies can only identify from ten to fifteen percent of the materials that come out of the KD. 15

stacks.

I do wonder whether it would be possible to send the chemical school waste off-site. Missouri is a part of the Midwest Radioactive Waste Compact. Michigan was the first host state, and it got itself expelled from the Compact. Now, Ohio is the next chosen state--host state, and citizens in Ohio are circulating a petition to vote on a constitutional amendment to ban any radioactive waste from outside of the state.

K 1(

I wonder, if the Army Chemical School becomes a reality in Missouri, how can we be sure that some of America's thirty thousand tons of chemical weapons wastes stockpiled elsewhere will not be transported into Missouri for disposal; that is, the waste currently located in Alabama at Fort McClellan, and in Arkansas, Colorado, Indiana, Kentucky, Maryland, Oregon, Utah, and at the Johnston Atoll near Hawaii.

K 1

I believe it is naive to rely on the hope that any other state will accept Missouri's toxic and radioactive wastes.

K 1

And I have one more page--paragraph, I should say.

I'm traditionally an optimist and work hard for goals I think could be achieved. Never before have I spoken publicly in opposition to a project that already

seems to be a done deal.

But I'm here tonight because I still have a glimmer of hope that the citizens of Fort Wood's neighboring communities will recognize the dangers of the Army's Chemical Training School and will take the lead in urging Governor Carnahan to reconsider his support of it. We hope the Governor, as he begins his second term, will not permit his administration to be remembered for having imperiled the health and safety of his Missouri citizens by the potential dissemination of chemical, biological, and radioactive poisons into our air, water, and land.

It's not too late.

Thank you.

PROFESSOR RICHARD TYLER: Thank you, ma'am. There being no further speakers, let me say we appreciate the time and the effort that you took to join us tonight, the advice and comments that you gave us. Your comments will be carefully considered as the Army moves forward with the preparation of the Final EIS. And, again, please be aware that any additional comments that you may mail in must be postmarked no later than November 25, 1996. Thank you once again. With that, this meeting is hereby adjourned.

[Meeting adjourned at 8:27 p.m.]

CERTIFICATE

I, SUE WHITE, Certified Court Reporter, Certified Verbatim Reporter, do certify that I was present at the Public Hearing and at the time and place described in the caption sheet hereof; that I reported the proceedings as set forth herein. I further certify that the foregoing is a true and accurate transcript of such proceedings.



SUE WHITE, CCR, CVR-CM

Comment No.	RESPONSE
Trans-TS.01	See response to Heartwood comment number 11 (G-Hea.11).
Trans-TS.02	The potency of VX and GB are well documented in subsections 5.2.2.15.B.5 and B.2.12.3.1. The amount of VX and GB used per year is recorded in Table B.6 (9 ounces (300 ml) per year of VX and 6 ounces (200 ml) per year of GB. The binary agents, VX and GB are mixed 2-3 and 1-2 times per year, respectively, indicating the maximum volume of VX and GB in storage in a double-locked safe at the CDTF will be less than 9 ounces and 6 ounces, respectively, for the agents. Great care was taken in the EIS to assess risks to humans and the environment by thoroughly evaluating methods of mixing, handling, storing, training with the live agents VX and GB, and disposal of wastes from the CDTF. The evaluation concluded these practices will prevent the possibility of exposure of the agents to the general public in the surrounding community. A description of the transport of binary agent components, mixing of binary components, storage of binary components and mixed agents, and general handling of agents can be found in subsection 5.2.2.8.5 of the EIS. Safety policies and procedures used at the CDTF when handling and training with live agents are documented in subsection 5.2.2.15.B.5. The fact that no accidents have occurred at FMC, where some 25,000 soldiers have undergone live agent training over the past 10 years, further supports the conclusion that this is a highly controlled training activity. The Army's safety policies and procedures which have been used at FMC for live agent training will be employed at FLW. The possibility of a release of VX and GB from the CDTF is not considered plausible. The main reasons for this conclusion are: 1) the CDTF at FLW will be designed to withstand severe earthquakes; 2) the CDTF will have many redundant safety features to contain agents (e.g., negative air pressure in rooms, and air filtration systems and air monitors for detecting agents); and the highly controlled methods of handling and training with live agents.
Trans-TS.03	Subsection 5.2.2.5.B.3 describes design features of the CDTF. Because of the design, construction and security features of the facility, the potential for a breach of the containment facility that would compromise its integrity is extremely remote.
Trans-TS.04	BRAC legislation mandates that the Chemical Defense Training Facility (CDTF) will operate at Fort McClellan until such time as the capability to operate a replacement facility at Fort Leonard Wood is achieved. Additionally, as discussed in subsection 1.3.2.1, the law also relieves the DOD from the NEPA requirement to consider alternative installations to close or realign. Consequently, reviewing alternatives that would include conducting toxic agent training at locations other than FLW would be beyond the scope of this analysis.
Trans-TG.01	Comment noted.
Trans-TG.02	Comment noted.
Trans-TG.03	Comment noted.

	Comment No.	RESPONSE
1	Trans-KD.01	See response to Missouri Coalition for the Environment comment number 6 (G-MCE.06).
2	Trans-KD.02	As discussed in subsection 3.3.3.7 fog oil is used as the primary obscurant in training. Other forms of obscurants (including smoke pots and grenades) are used prior to generating fog oil obscurant to determine dispersion patterns, and smoke pots may also be used during fog oil generation to fill localized holes in the fog oil obscurant cloud. Both of these other forms of obscurants may also be used independently in small quantities. Additional text has been added to subsection 3.3.3.7 to provide background on the number of smoke pots and grenades that are normally used in association with fog oil training.
3	Trans-KD.03	As stated in subsection 1.4.6.5 the Army is converting all hexachloroethane-based (grenade and smoke pot) obscurant systems to terephthalic acid-based (grenade and smoke pot) systems. This transition will be completed prior to the relocation of the schools to FLW; consequently the EIS considers the health and environmental effects of using terephthalic acid-based obscurant smoke pots and smoke grenades. A more detailed discussion of the toxicity of terephthalic acid and human health implications has been added to subsection 5.2.2.15.B.2. As discussed in subsection 3.3.3.7 these grenades and smoke pots may be used alone or in combination with fog oil based systems; however, fog oil based obscurant systems will remain the primary system used in obscurant training The OSHA established permissible exposure level, for a worker in the workplace, for both HC and TPA have both been established at 10 milligrams per cubic meter. This exposure level is based upon continuous exposure of a worker to this level for 40 hours per week throughout their career. Anticipated exposure durations from the use of these grenades and smoke pots would be much shorter than 40 hours per week. Additionally, the advantage of using TPA when compared to HC is that the substances in TPA will degrade in the environment much faster than the substances in HC, thereby reducing the potential for accumulation of materials as is possible with the use of HC. Also see response to Kay Drey's verbal comment number 2 (Trans-KD.02).
4	Trans-KD.04	Subsection 3.3.3.7 describes the quantities of fog oil associated with the RCP, OPTM, and EPTM alternatives.
5	Trans-KD.05	As discussed in subsection 3.3.3.6.3, the Army's Proposed Action will not include the incineration of decontaminated waste by-products from CDTF training. Decontaminated waste by-products from the CDTF will be transported off-post and disposed of by licensed contractors. Consequently implementation of the Army's Proposed Action will not add any thermal treatment units (or incinerators) to FLW. The existing medical waste incinerator at General Leonard Wood Army Community Hospital will remain in use for the disposal of medical wastes generated at the hospital.

1	Comment No.	RESPONSE
1	Trans-RL.01	The Army is not proposing the use of a thermal treatment unit on-site for the disposal of decontaminated waste by-products from the CDTF. Decontaminated waste by-products will be disposed of as discussed in subsection 5.2.2.8.5. See the discussion in response to Heartwood comment number 13 (G-Hea.13) and Ozark Chapter, Sierra Club comment number 15 (G-OCSC.15) for additional information.
2	Trans-RL.02	All wastes at FLW are stored, used and disposed of in strict accordance with all applicable laws and regulations. This applies to ongoing operations, as well as activities to be relocated to FLW in association with the Military Police School and Chemical School. Subsection 5.2.2.8.5 discusses waste handling and management at FLW, see discussion in response to Heartwood comment number 13 (G-Hea.13) and Ozark Chapter, Sierra Club comment number 15 (G-OCSC.15) for additional information.
3	Trans-RL.03	As they are now at FLW, all wastes in the future will be handled according to the applicable laws and regulations. This will provide procedures for the proper handling and disposal of materials and wastes.
4	Trans-JN.01	See the discussion in response to Heartwood comment number 13 (G-Hea.13) and Ozark Chapter, Sierra Club comment number 15 (G-OCSC.15) for additional information. The Army has procedures for the separation of materials prior to disposal. Additional information concerning the existing procedures has been included in subsection 4.8.1. Discussions of waste handling from the CDTF are found in subsection 5.2.2.8.5 and in Appendix I in Vol. III of the FEIS. Subsection 5.2.2.8.5 and Appendix I have been modified to provide a more detailed description of agent decontamination, CDTF wastewater storage, handling and disposal. Additionally, subsection 5.2.2.8.5.2 has been modified to provide additional discussion concerning the procedures that will be used to dispose of BRAC-related special, medical and hazardous wastes.
5	Trans-JN.02	See the discussion in response to State of Missouri, Department of Natural Resources comment number 3 (S-MDNR.03) for additional information. Subsection 4.8 provides a discussion of existing plans for accident avoidance and response. Subsection 5.2.2.15.A.2 provides a discussion of local emergency preparedness, and subsection 5.2.2.8.5.2 has been modified to include additional information concerning the transportation of decontaminated special waste by-products from toxic-agent training at the CDTF.

1	Comment No.	RESPONSE
1	Trans-JN.03	Subsection B.2.12 of Volume III, Appendix B provides an analysis and safety/toxicity information of materials used in training. Subsection 5.2.2.15.B evaluates the human health implications associated with training. A report titled *Evaluation of Human Health Risks Associated with Fog Oil Training at Fort Leonard Wood, Missouri*, provides a detailed chemical analysis of fog oil. The general public can find copies of this report at any one of 11 public library repositories identified in Vol. I of the FEIS. Appendix I of the FEIS describes CDTF waste management procedures.
2	Trans-JN.04	Appendix I, Volume III, provides a discussion of special waste handling. The Army is responsible for ensuring that all materials are properly disposed of.
3	Trans-JN.05	The Army is not aware of any practicable way to identify the amount of "potentially harmful material" that is released in the entire State of Missouri. Materials that are being used at FLW, and that are planned for future use are described in applicable sections of the EIS, as are the methods that will be used to ensure that these materials are stored, used and disposed of in accordance with all applicable laws and regulations.
4	Trans-JN.06	Subsections 3.3.2.1 and IV.8 provide a discussion of the Relocate Current Practice (RCP) Alternative. This Alternative is based on the current training activities at FMC. Table 3.1 provides a visual depiction of the training goals that will be accomplished using the current training methods and which training goals could be accomplished using an alternative training method. The training methods are described in additional detail in subsection 3.3.3 of the EIS. As discussed in subsection 3.2.1 and subsection IV.5 and IV.7.3, representatives of the Military Police School and Chemical School at FMC were instrumental in the development of these alternative training methods.
5	Trans-FW.01	Army policy requires the use of the Economic Impact Forecast System (EIFS) for economic modeling. Appendix E and subsection 5.4.2.14.1 of the FEIS provide a discussion of EIFS methodology and results. The outputs of the EIFS Model in respect to employment generated, etc. are the direct result of the input values into the model. A "multiplier" effect, which is an EIFS system generated variable, is applied to the new military and civilian jobs directly associated with the realignment, to estimate the direct and indirect new regional employment created by the realigned population.
6	Trans-KD.06	Subsection 5.2.2.8.5 and Volume III Appendix B, subsection B.2.12.3 contain information concerning the amount of agents the Army proposes to use at FLW. No weapons will be stockpiled at FLW. Significant changes to the estimated quantities of training materials that will be stored at FLW will require proper environmental review in accordance with AR200-2 and all applicable Federal and state regulations. The Chemical Weapons Convention also restricts the amount of nerve agent that can be stored.

1	Comment No.	RESPONSE
1	Trans-KD.07	See response to Ozark Chapter, Sierra Club comment number 18 (G-OCSC.18) concerning the air permit process and the variance for opacity which was granted. Subsections 5.2.2.3.7 provides information on the air permit process. Subsection 3.3.3.7 describes the quantities of fog oil associated with the RCP, OPTM, and EPTM alternatives.
2	Trans-KD.08	Subsections 3.3.3.1.4, 3.3.3.1.7, 3.3.3.3, 3.3.3.4, and 3.3.3.6 provide information on "chemical" training, while training at the CDTF is discussed in subsection 3.3.3.6.3. Subsections 3.3.3.1.4, and 3.3.3.2 provide information on the use of biological materials that simulate biological agents in training.
3	Trans-KD.09	See response to Kay Drey's comment number 9 (I-KD.09).
4	Trans-KD.10	Subsection 5.2.2.8.5 provides a discussion concerning the transportation of the binary components used in toxic agent training, and the mixing of these items at the CDTF. Toxic agent will not be manufactured off-post and transported into Missouri to support CDTF training requirements or for any other use. The types and quantities of nerve gas, biological agent simulants, and radioactive materials to be used at the Installation are specified in applicable sections of the EIS. As stated in subsection ES.3, FLW will not be used to stockpile chemical weapons, manufacture or use toxic bacterial agents, or use toxic nerve agent in any uncontrolled or exterior environment. Additionally: • Section 3 accurately describes the non-involvement of chemical weapons or live biological agents in the Proposed Action; • subsection 5.2.2.8 provides a description of the handling and management of toxic agents used in training for chemical defense; and • subsection 5.2.2.8 also provides a description of the handling and management of radiological isotopes which are used for training in radiation protection and safety. Regarding the implied concern that FLW will expand the mission of the Chemical School (or other activities at FLW) without public disclosure, subsection 1.3.2.2 of the EIS addresses this concern, and identifies procedures that will be used to ensure that future mission changes are subject to appropriate environmental review and public disclosure, review and comment.
5	Trans-KD.11	Subsection 1.4.6.5 notes that the Chemical Weapons Convention acknowledges the need to train personnel in the location, identification and decontamination of nuclear, biological and chemical agents that might be encountered; and to establish and maintain proficiency with defensive measures required to protect civilian and military personnel and equipment from these types of weapons. Additionally as stated in subsection 5.2.2.8.5 the CDTF standard operating procedures restrict the amount of GB and VX that may be stored on site to less than the limits authorized by the Chemical Weapons Convention.

	Comment No.	RESPONSE
1	Trans-KD.12	Regarding the concern that the Federal government will expand the mission of the Chemical School (or other activities at FLW) without public disclosure, subsection 1.3.2.2 of the EIS addresses this concern, and identifies procedures that will be used to ensure that future mission changes are subject to appropriate environmental review and public disclosure, review and comment. The estimated quantities of various materials to be used are identified in Appendix B. Subsection 5.2.2.8 has been modified to more clearly describe the disposal of BRAC related wastes. Significant changes to the estimated quantities of training materials that will be stored at FLW will require proper environmental review in accordance with AR200-2, Federal, state, and all other appropriate regulatory agencies. FLW will continue to comply with all applicable regulations. Disposal of the by-products of nuclear, biological, and chemical training will be in accordance with all Federal, state, and local regulations.
2	Trans-KD.13	The Army is not proposing the use of a thermal treatment unit on-site for the disposal of decontaminated waste by-products from the CDTF. See discussion in response to Heartwood comment number 13 (G-Hea.13). Decontaminated waste by-products from the CDTF will be transported off-post and disposed of by licensed contractors. Consequently implementation of the Army's Proposed Action will not add any thermal treatment units (or incinerators) to FLW. The potential environmental effects of constructing and using a thermal treatment unit has been included and evaluated for environmental impacts as part of the Relocate Current Practice Alternative. RCP Alternative is not the Army's proposed action.
3	Trans-KD.14	As discussed in subsections 3.3.3.6.3 and 5.2.2.3.6.2, the Army's Proposed Action will not include the incineration of decontaminated waste by-products from CDTF training. Cumulative impacts have been addressed in the response to the Environmental Protection Agencies comment number 5 (F-USEPA.5).
4	Trans-KD.15	The Army is not proposing the use of an on-site thermal treatment unit for the disposal of decontaminated waste by-products from the CDTF. See discussion in response to Heartwood comment number 13 (G-Hea.13).
5	Trans-KD.16	Appendix B provides a discussion concerning radiological isotopes, while subsection 5.2.2.8.4 provides as discussion concerning the use of these items. These discussions have been modified to include additional information concerning the long-term storage and disposal of radiological isotopes.

Comment No.	RESPONSE
Trans-KD.17	None of the facilities at FLW will be capable of supporting Chemical Weapons Demilitarization. As discussed in the Executive Summary (subsection ES.3.1) Anniston Army Depot is not dependent on the Chemical School, and will not be moved to FLW. Movement of the chemical weapons from Anniston to FLW would violate the intent of BRAC legislation requiring the move of the Chemical School and Military Police School to FLW, as well as other Federal regulations concerning the movement of chemical weapons. Additionally subsection ES.3.1 provides a commitment by the Army that the operation of the CDTF does not require the relocation of stockpiled chemical weapons, and that FLW will not be used to stockpile chemical weapons, manufacture or use toxic bacterial agents, or use toxic nerve agent in any uncontrolled or exterior environment. See the response to Kay Drey's comment number 15 (I-KD.15) for additional information.
Trans-KD.18	Subsection B.12.8.4 Radiological Materials Processing and Disposal, provides additional information to augment subsections 4.8.8 and 5.2.2.10.3 by providing more specific details concerning existing FLW procedures for the use, storage and disposal of radio isotope materials.

U.S. Environmental Protection Agency, Region VII
(F-USEPA)

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
Denver Federal Center, Building 56, Room 1003
P.O. Box 25007 (D-108)
Denver, Colorado 80225-0007

November 20, 1996

ER 96/662

Colonel Robert E. Morris
District Engineer
U.S. Army Corps of Engineers
Kansas City District
601 East 12th Street
Kansas City, Missouri 64106-2896

Dear Colonel Morris:

The Department of the Interior (Department) has reviewed the October 7, 1996, Draft Environmental Impact Statement (DEIS) for the Relocation of the U.S. Army Chemical School and the U.S. Army Military Police School to Fort Leonard Wood, Pulaski County, Missouri. The Department offers the following comments and recommendations for your consideration.

ENVIRONMENTAL IMPACT STATEMENT COMMENTS

The U.S. Fish and Wildlife Service (Service) is an EIS cooperating agency and has provided input to the Army throughout DEIS development on issues within its areas of expertise and jurisdiction. The DEIS adequately covers fish and wildlife resources and expected impacts to those resources from the proposed relocation.

The Environmentally Preferred Training Method (EPTM) Alternative has fewer impacts than the preferred alternative--Operationally Preferred Training Method Alternative (OPTM)--mainly because significantly less fog oil (about 40 percent less) will be used annually. The Army's preferred support facility alternative--Combined Headquarters and Instruction--has fewer overall impacts to forested habitat, but will affect more of the better quality Indiana bat habitat than the other alternatives. However, the Service believes that given the extent of existing forest habitat on the installation, the added impacts associated with the preferred support facility alternative are not significant relative to Alternatives 1 and 2.

None of the proposed alternatives impact state or Federal fish and wildlife lands or facilities, nor do they impact lands which were acquired or are managed with Federal grant-in-aid assistance under the Wildlife Restoration Act (Pittman-Robertson Act, Public

Law 75-415) or the Fish Restoration Act (Dingell-Johnson Act, Public Law 81-681).

ENDANGERED SPECIES ACT COMMENTS

On September 10, 1996, the Army requested formal consultation with the Service under Section 7 of the Endangered Species Act on certain actions associated with the proposed alternative. The Army concluded that these actions "may affect" three federally listed species--the threatened bald eagle, the endangered Indiana bat, and the endangered gray bat--and provided a comprehensive Biological Assessment and supporting appendices to support its findings.

The Service concurred with the Army's "may affect" finding and responded, in a September 26, 1996, letter, that sufficient information and data had been provided to initiate formal consultation. The Service intends to deliver its Biological Opinion on the preferred alternative prior to the Army's final EIS and Record of Decision. The Service recently provided a Biological Opinion to Fort Leonard Wood that addressed the ongoing mission and Master Plan actions, concluding that these actions would not jeopardize the continued existence of the three species. The forthcoming Biological Opinion will determine whether additional actions included in the preferred alternative will result in jeopardy or no jeopardy to the continued survival and recovery of the three federally listed species throughout their ranges. The Opinion may provide reasonable and prudent alternatives if warranted to offset jeopardy, and reasonable and prudent measures to minimize take (harm) of listed species. No designated critical habitat for listed species occurs in the action area.

FISH AND WILDLIFE COORDINATION ACT COMMENTS

Few impacts to jurisdictional wetlands are anticipated from any of the alternatives. The DEIS notes that direct (from vehicle operation within the wetland) or indirect (from sediment and contaminant runoff during construction and training) impacts could occur to the 7.4-acre wetland in the Ballard Hollow mobile obscurant smoke site. We recommend that vehicle operations within this wetland be avoided and special care taken during construction to minimize or avoid sediment and contaminant runoff to the wetland. 1

Mitigation for Unavoidable Adverse Impacts

The Service strongly supports the commitments listed in Sections 5.1.4.1, 5.1.4.2, and 5.1.4.3 to reduce soil erosion and sedimentation in streams, institute a biological monitoring program, provide added protection to gray bats using Freeman Cave, and develop and implement installation landscape-scale land

management policies. We commend the Army especially for the measures to be implemented to lessen rutting and erosion at stream crossings and during off-road vehicle operations. Should culverts be used at stream crossings, they should be adequately sized to prevent channel blockage and filling upstream of the structure. In addition, it is vitally important that streambed elevation and gradient upstream and downstream of the culvert be maintained to allow upstream and downstream passage of aquatic organisms. 2

SPECIFIC COMMENTS

Page ES-14, Section 7 Consultation, Lines 11-18. This discussion would be more accurate if corrected to read in the final EIS as follows: "The USFWS ... Biological Opinion (BO) <u>that concludes whether the proposed mission relocations will jeopardize the continued existence of the bald eagle, Indiana bat, and gray bat. If the actions will jeopardize the species, the Opinion may specify reasonable and prudent alternatives to offset jeopardy and reasonable and prudent measures to minimize take or harm to the species, if appropriate."</u> Strike the remainder of the section except for the last sentence which should be modified to read "The proposed ... with the USFWS, <u>and compliance with the Endangered Species Act."</u> 3

Page 4-22, Lines 8-25. If dye trace work has delineated recharge zones for caves, inclusion of a figure in the final EIS displaying these zones would help the reader better understand the groundwater/karst relationships discussed in the narrative. 4

Page 4-58, 4.11.5.4, Biological Assessment. This section should be updated in the final EIS to reflect that the Service provided a Biological Opinion to Fort Leonard Wood on October 23, 1996, that concluded that certain ongoing mission and Master Plan actions would not jeopardize the continued existence of the three federally listed species. 5

Page 5-5, 5.1.3.4, Significance. We recommend adding migratory birds and state-listed species to the list of criteria used to determine "significant" impacts. The Ecological Risk Assessment performed for amphibians, reptiles, and birds established that these organisms may inhale unsafe doses of fog oil. Most birds on Fort Leonard Wood are protected by the Migratory Bird Treaty Act, and seven birds and three amphibians listed in Table 4.17 are state-listed and have some legal protections. 6

Page 5-92, Lines 33-34; and Page 5-93, Line 10. Mobile fog-oil training under the Army's preferred alternative (OPTM) is stated as affecting Indiana bats and gray bats out to roughly 9,800 meters, which is different than the 7,000 meters stated in the 7

Biological Assessment. We assume the latter is the correct figure based on revised risk assessment assumptions. If so, this information should be corrected in the final EIS. Tables 5-27 and 5-28 on page 5-96 should also be corrected. 7 CO

Page 5-101, Lines 48-53. Additional detail, similar to that provided for the federally listed species, should be provided in this section in the final EIS so that some sense of the scope and intensity of the impact is conveyed. The risk assessment establishes distances from the source at which amphibians, reptiles, and birds may inhale unsafe amounts of fog oil. These distances should be added to the discussion and, if possible, an estimate provided of the number of organisms potentially affected, based on assumed population densities (from the literature or survey data from the installation) in the affected area. 8

Measures identified by the Service and Fort Leonard Wood to minimize or avoid harm to listed species from fog-oil training (as part of Endangered Species Act formal consultation) may also serve to reduce impacts to amphibians, reptiles, and birds.

Page 5-230, Lines 1-3. The first sentence should be modified in the final EIS to read " ... which has been noted as a minimum size of forest <u>needed in the Midwest to maximize benefits for the less sensitive forest-interior neotropical migrant birds."</u> 9

Page 5-232, Lines 20-27. We encourage the installation to mitigate the loss of important habitats such as riparian areas that may not be classified as jurisdictional wetlands. This mitigation may be as simple as establishing corridors along existing open or narrowly wooded drainages and allowing natural vegetation succession to proceed. 10

Page 5-223, Lines 1-2. It is stated that 2.7 acres of suitable gray bat foraging habitat will be lost as a result of construction of support facilities. This estimate conflicts with the Biological Assessment that states that 1.9 acres will be affected. These estimates should be reconciled in the appropriate document. Table 5.42 may also need to be modified. 11

Page 5-236, Lines 4-8. This paragraph suggests that impacts to Roubidoux Creek from the mobile smoke vehicle crossing can be minimized by restricting or eliminating crossing use when water is flowing in the creek. We agree and recommend that this be added as a mitigation measure in Section 5.1.4. of the final EIS. 12

The Service has a continuing interest in working with the Army and Fort Leonard Wood in design of fish and wildlife mitigation measures for the proposed relocation. For continued consultation

and coordination with the Service in this regard, please contact the Field Supervisor, U.S. Fish and Wildlife Service, 608 East Cherry Street, Room 200, Columbia, Missouri 65201-7712, telephone (314) 876-1911.

Thank you for the opportunity to provide these comments.

Sincerely,

Robert F. Stewart

Robert F. Stewart
Regional Environmental Officer

cc: Regional Director, FWS, Twin Cities

1	F-FWS.01	No construction in Ballard Hollow will be conducted. All provisions of the Clean Water Act, including Section 404, will be complied with during training activities.
2	F-FWS.02	Culverts will be designed and sized to: prevent channel blockage and accumulation of debris or stormwater upstream of the structure; and to minimize obstructions to the passage of aquatic organisms.
3	F-FWS.03	The text on page ES-14 has been modified.
4	F-FWS.04	An additional graphic has been added to Section 4 that shows the results of the dye traces conducted at FLW.
5	F-FWS.05	Subsection 4.11.5.4 has been updated to reference the Biological Opinion on the Ongoing Mission, as well as include some of the specific information contained in the opinion.
6	F-FWS.06	We do not agree with this recommendation. There may be adverse impacts to migratory birds and/or state-listed species that are not necessarily significant. For example, a noise disturbance to a red-tailed hawk during training may be an adverse impact, however, if impacts to migratory birds were part of the criteria for determining "significance" then this noise disturbance would be significant. Thus, any impact to a migratory bird or state-listed species would translate into a significant adverse impact. "Significance" or potential significant adverse impacts, as it relates to the Migratory Bird Treaty Act, are covered under the scope of the fifth item in subsection 5.1.3.4. Migratory birds and state-listed species are currently monitored as described in subsection 4.11.2.
7	F-FWS.07	Subsection 5.2.2.11.A.2 (as well as several other place in the EIS) has been modified to reflect the more recently developed information contained in the Biological Assessment.
8	F-FWS.08	Subsection 5.2.2.11.B.4 has been modified to more clearly explain potential impacts of fog oil training on other protected species.
9	F-FWS.09	Noted, text in subsection 5.3.2.11.B has been modified.
10	F-FWS.10	Noted, the discussion located in subsection 5.1.4.3 has been modified to include a fifth item under the Landscape-Scale Forest Management Policy.
11	F-FWS.11	Subsection 5.3.2.11.A (as well as several other places in the EIS) has been modified to reflect the more recently developed information contained in the Biological Assessment.
12	F-FWS.12	Subsection 5.3.2.11.D.7 has been modified to clarify this issue.

13

U.S. Department of the Interior
Office of Environmental Policy and Compliance
(F-FWS)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
726 MINNESOTA AVENUE
KANSAS CITY, KANSAS 66101

NOV [illegible] 1996

OFFICE OF
THE REGIONAL ADMINISTRATOR

Mr. Alan Gehrt (MRKEP-PR)
U.S. Army Corps of Engineers
Kansas City District
601 East 12th Street
Kansas City, MO 64106-2896

Dear Mr. Gehrt:

RE: Relocation of the U.S. Army Chemical School and U.S. Army Military Police School to Fort Leonard Wood (FLW), Missouri

In accordance with our responsibilities under Section 309 of the Clean Air Act and the National Environmental Policy Act (NEPA), the Environmental Protection Agency (EPA) has reviewed the referenced Draft Environmental Impact Statement (DEIS). I wish to express my appreciation for the manner in which the BRAC Team has worked closely with my staff throughout the DEIS preparation process. Your efforts have clearly been directed at identifying and resolving all significant issues associated with the relocation of these training functions.

Based on our review of the information presented in the DEIS, and the resulting identification of significant issues associated with this project, the EPA believes that implementation of the Army's proposed action (Optimum Training Method) will not avoid unsatisfactory adverse impacts to human health and the environment. The Army's identified intent to pursue the use of graphite powder as an obscurant (page 1-10 of the DEIS) further heightens the need to document and fully mitigate all aspects of the obscurant training. The technical enclosure to this letter provides a detailed statement of our concerns (Enclosure A).

The EPA is particularly concerned over the potentially significant impacts to human health and the environment resulting from obscurant (smoke) training, since we believe that the assurances of safety contained in the DEIS are based upon limited data of uncertain quality. Our assessment of the impacts of obscurant training to human health and the environment is further complicated by the absence of complete information on the actual schedule, frequency, and location of obscurant training and what amount of oil will be used in the training exercises. Our principal concerns in this area which led to our rating of the DEIS include: 1

- Composition of the Fog Oil: The chemical composition of the fog oil to be used in the obscurant training has not been adequately characterized; thus, we cannot judge its toxic potential. Up to 83 percent of the components of the fog oil have not been resolved, 2

and of the compounds which have been identified, there are no health standards against which one may assess their toxic effects. We do not believe that the Army has demonstrated whether or not the composition of the fog oil changes as it leaves the combustion generator. Further, the Army has not accounted for how the manufacturer's variation in composition of the neat (raw) oil used impacts their ability to assess and monitor impacts. **2 cont.**

- Off-site Migration of the Fog Oil: The DEIS includes a workplace Preliminary Risk Estimate (PRE) which concludes that no unacceptable health risks would result to soldiers wearing protective equipment from the obscurant training. However, the PRE is primarily a cursory occupational risk screen which does not account for human health exposures from the potential migration of the obscurant cloud to the cantonment area or to areas adjacent to FLW. **3**

- Compliance with the Clean Air Act (CAA): While the Army references the appropriate EPA CAA documents and regulations in the DEIS, they fail to demonstrate that Prevention of Significant Deterioration increments to the National Air Quality Standards for PM_{10} will not be exceeded for any of the three alternatives for obscurant training. These points are especially important as the Army proceeds to obtain an Air Quality permit from the state of Missouri, the stringency of which is not yet defined. **4**

- Cumulative Impacts to Air Quality: We are also concerned about the cumulative effect of associated training activities such as flame training, the smokepot and grenade training, the introduction of exhaust fumes from an additional 1,300 vehicles, and the hazardous waste incinerator contributing particulate matter to the atmosphere, in addition to the obscurant training. **5**

- Monitoring Plan/Contingency Planning: The Army does not have a fully developed monitoring plan for the project, nor do they have a contingency plan in place in the event of a mishap of fog oil migrating off-installation or into the cantonment area of the base. **6** **7**

- Ecological Risk Assessment (ERA): While the approach taken in the ERA is straightforward and relatively transparent, the document contains significant deficiencies. The uncertainty of the results of the ERA are unacceptable, the conclusions of risk or no-risk are indeterminate, and the risk characterization to receptors is **8**

incomplete. While our comments specifically pertain to the ERA for selected amphibians, reptiles, and birds, they are equally relevant to the analogous sections in the ERA for Indiana Bats, Gray Bats, and Bald Eagles at FLW. **8 cont.**

Owing to the significance of our concerns, the EPA has rated the DEIS as "Environmentally Unsatisfactory - Insufficient Information" (EU-2). Based on the potential significant impacts involved, this proposal may be a candidate for referral to the CEQ if EPA's concerns are not resolved in the final EIS. An explanation of EPA's rating system is enclosed (Enclosure B). **9**

Through a series of meetings with the Army, we jointly identified a number of actions that the Army needs to commit to ensure protection of human health and the environment after the project is implemented. In order to help resolve our concerns, provide an acceptable level of environmental protection to FLW and the surrounding area, and meet the statutory intent of NEPA, the Army must ensure that the following data collection actions and plans are included in the final EIS and Record of Decision (ROD) for the project. These actions include:

- The Army will collect fog oil after it leaves the generator and perform mutagenicity testing on the fog. This information will be incorporated into the overall Monitoring Plan/Adaptive Management Strategy for the project. The Army will use the EPA as a technical consultant on this data collection effort. **10**

- The Army will include Benzene, Toluene, Ethylbenzene, Xylene (BTEX) and Polycyclic Organic Matter (POM)/Polycyclic Aromatic Hydrocarbons (PAHs) as compounds to monitor for in the Air Monitoring Plan or conduct additional testing for these compounds prior to initiating training to provide decision-makers and the public with data of sufficient quality to ensure the contaminants will not be present in the obscurant cloud at levels of health concern. **11**

- Along with the overall Monitoring Plan for the project, the Army will prepare and implement an Adaptive Management Strategy to evaluate all monitoring data and determine if modification and/or elimination of training activities or changes to training location are necessary. The overall Monitoring Plan for the project and the Adaptive Management Strategy are to be included in the FEIS and the final of each will be committed to (included or referenced) in the ROD. The EPA will be involved in the preparation of the overall Monitoring Plan and Adaptive Management Strategy for the project. **12**

- The Army will develop and implement a Public Awareness Program for workers and residents on FLW to describe the level of risk in the event that a fog-oil plume drifts onto the cantonment area/off-base. The Public Awareness Program will be included in the FEIS and be committed to (included or referenced) in the ROD. **13**

- The Army commits to not using cold weather modifiers (materials or additives to "cut" fog oil) for use during cold weather temperatures or conducts appropriate testing of generated fog oil to ensure that additional health impacts are not created. **14**

It is also our understanding that the National Academy of Sciences (NAS) Committee on Toxicology is currently reviewing the current fog oil standard and is expected to release a report in January 1997, wherein the NAS will provide a level of exposure for the general population. The EPA recommends that the Army incorporate the NAS finding into the FEIS for the project. **15**

In the spirit of continued cooperation which has marked this project from the beginning, we request that the EPA have the opportunity to review and comment on the draft ROD before it is formally signed and implemented. We believe it would be advantageous for all concerned if the EPA continues to work closely with the Army and all interested parties in developing and implementing an environmentally sound proposal for this project. **16**

Thank you for the opportunity to comment on the DEIS. We look forward to working with the BRAC Team to resolve the significant issues associated with this project. If you have any questions, please call Ms. Cathy Tortorici, Project Manager, at 913-551-7435.

Sincerely,



Dennis Grams, P.E.
Regional Administrator

Enclosures:
1. Detailed Comments by EPA
2. EPA's DEIS rating system under Section 309 of the Clean Air Act

cc: Gary Frazer, Fish and Wildlife Service
Katie McGinty, Council on Environmental Quality
Richard E. Sanderson, OFA (2251-A)

Enclosure A: Technical Comments - Review of the Draft Environmental Impact Statement (DEIS) for the Department of the Army's Relocation of the U.S. Army Chemical School and U.S. Army Military Police School to Fort Leonard Wood (FLW), Missouri

Health Impacts of Fog Oil to Soldiers and the General Population

Impacts to Soldiers

In order to assess the health impacts of fog oil on the soldiers to be trained, the Army: (1) conducted a cursory analysis of the fog oil to determine the toxic components in it, (2) adopted the American Conference of Government Industrial Hygienists (ACGIH) oil mist standard, which is a chemical surrogate for generated oil fog (it is the closest occupational standard to fog oil, but not the same thing), in order to determine when protective clothing and equipment should be worn, and (3) has stated that they will comply with the occupational standard threshold limit value (TLV) of 5 mg/m^3 (for total oil mist). Based on the information the Army has gathered to date, the EPA suggests that the Occupational Safety and Health Administration (OSHA) be consulted as to the adequacy of protection for the trainees and instructional cadre. **17**

We also suggest that the Army review the medical records of members of the Military Occupation Specialty 54B to determine what health effects have been experienced by the trainees and instructional cadre that may be included in this data source. This information may help in determining exposure limits to this occupationally exposed group. **18**

Impacts to the General Public

The Army has proposed the same TLV of 5 mg/m^3 standard for the general population. In this context, the EPA disagrees with the use of this standard because it does not account for sensitive human subpopulations and it assumes that the exposure frequency and duration will not exceed that of the occupationally exposed group. The Army identified that an emergency standard of five times the TLV (25 mg/m^3) could be used as a short-term exposure limit. This short-term exposure limit of fog oil is not sufficient to account for long-term impacts to the general population. Specifically, uncertainty or modifying factors should be applied to the TLV to account for the general population exposures and to account for a longer time period of exposure to the identified toxics in the oil mist if off-site migration occurs. **19**

Currently, there is a short-term exposure level (STEL) of 10 mg/m^3 which is presently under review by ACGIH. In the absence of the STEL, the Army has proposed up to 40 mg/m^3 for its soldiers, and has indicated that it may use this figure, or a modification of it, for the calculations of off-site migration to the general population. It may be appropriate for the Army to apply the 40 mg/m^3 standard to their soldiers, i.e., give them a whole weeks worth of exposure in one hour, which would still meet the letter of occupational law. The EPA does not accept an adjustment of this sort for exposure to the general population because the obscurant training is a permitted, regularly occurring release. **20**

Based on the discussion in the DEIS, fog oil can be considered a finely dispersed aerosol of oil droplets ranging in diameter from one to three microns. Simple modeling assessments referenced in the DEIS using a Gaussian dispersion model under a Class D stability regime predict concentrations of .18 mg/m^3 at a downwind distance of 4 km. This translates into a value of 180 μg/m^3 of finely dispersed aerosol. Furthermore, a study by Driver et al. is referenced in the Fog Oil Literature Review (Section 3.3.1) dealing with inhalation effects of SGF-2 fog oil. This reference states that downwind concentrations of fog oil can vary between 3.0 and 300 μg/m^3 at distances as far as 40 km. 21

The National Ambient Air Quality Standard (NAAQS) for respirable particulate less than 10 microns in diameter (PM_{10}) is 150 μg/m^3 over a 24-hour period. In addition, the secondary NAAQS for PM_{10} is established at 50 μg/m^3 Annual Arithmetic Mean concentration. The data presented in the DEIS seem to indicate that there may be instances where off-base populations could be exposed to particulate levels exceeding the NAAQS. In order to better understand the potential for off-site migration of the fog oil, the Army needs to include in the FEIS and ROD for this project a clarification of the following factors surrounding the obscurant training, including: the overall obscurant training schedule, the duration and location of training, the type and number of smoke generators to be used while training, and how terrain/prevailing meteorological conditions will influence the location and duration of training events. 22

In addition it appears that further, more highly refined dispersion modeling will be required to better define the smoke training operational parameters that must be adhered to in order to assure compliance with the particulate matter standard. The EPA is concerned that the more significant long-term health threat could be inhalation of the oil mist itself based upon PM_{10} or more correctly based upon the most hazardous fraction of the oil mist, that being aerosols or mists whose mean geometric diameter is under 2.5 microns in size ($PM^{2.5}$). Documentary evidence provided by the Army states that the size distribution of the fog oil is around one to three micrometers in diameter. This is of ideal size for inhalation into the deep recesses of the lungs, and represents the bulk of the oil mist. This potential health threat has not been addressed by the Army. Persons with preexisting medical conditions, especially those with airway diseases (persons with allergies, asthma, chronic bronchitis etc.) may have their medical conditions aggregated by exposure to low levels of the oil. The Army needs to discuss the mechanism to mitigate, reduce and/or eliminate the potential for inhalation of the oil mist in the FEIS. 23 24

Inhalation of the fog oil is also of concern because the potential for exposure to toxic or mutagenatic compounds. The Preliminary Risk Estimate (PRE) discusses the health risks associated with the toxicity and mutagenicity characteristics of SGF-2 fog oils and exposure scenarios characteristic of troop exposures defined as the threshold limit value of 5 mg/m^3. In the absence of a thorough, definitive analysis of the fog oil, the EPA recommends that a modified mutagenicity test be done on the generated fog oil to help determine its potential to cause mutations or cancer to humans or animals. 25

The PRE was gender specific and age specific in its assumptions. That is, no consideration was given to female exposures even though the modern military has women soldiers and on-base female civilian workers, and the bulk of active duty dependents are assumed to be female. The PRE also did not consider the possibility that any of the pollutants in the oil fog could have estrogen-like activity in female receptors.
The FEIS needs to discuss the potential risk to women's health from direct or off-site migration of the oil fog and propose the necessary mitigative steps to resolve these concerns.

The PRE also did not consider exposure to the very young or to the very old which could be potentially exposed to the oil fog via off-site migration of the oil mist. Epidemiologic studies from numerous locations indicate a relationship between exposure to particulates and ozone (an anticipated photodegradation product) can cause adverse respiratory effects in children, both of which are known or suspected pollutants in the fog oil. Children's exposures to these two pollutants can cause an increased prevalence of chronic cough, chest illness, bronchitis, decrements in lung function, aggravation of upper and lower respiratory tract infections, and hospital admissions for respiratory conditions. 26

The elderly can also suffer disproportionately in comparison to healthy adults in the prime of their life from exposure to air pollutants. The aged representatives of the local population may reside on-post as dependent parents, or off-post as civilian residents. Aging individuals may be more susceptible to the hazards of the particulate matter and ozone because of declining function of major organ systems (including the immune system) and/or because of preexisting pulmonary diseases. The FEIS needs to discuss the potential risk to young and elderly populations from direct or off-site migration of the oil fog and propose the necessary mitigative steps to resolve these concerns.

Further, the Army has not accounted for the impact of obscurant training on quality of life issues beyond those relating to obscured visibility. There may be eye, nose and throat irritation, or a "burnt oil" malodor may also be experienced by some downwind, off-site receptors. The Army should determine what the odor threshold is for fog oil. With this information, a level of health concern can be developed and compared to the level which can be detected in the air by the average person. This would allow a person to know when they are being exposed, and either avoid the contamination or institute other protective measures. While these problems are often characterized as nuisance complaints, they can have serious adverse effects on the quality of life of the exposed individuals. The Army needs to discuss in the FEIS how these transient impacts will be quantified and what mitigative steps should be instituted to resolve these concerns. 27

Composition of the Fog Oil

In the DEIS and the PRE, the Army has attempted to show that exposures to identified toxic components in the fog oil decrease with increasing distance from the generators. The Army needs to clarify if and how the composition of the fog oil changes as a result of passing through the hot oil fog generators to be used in the training exercises. The EPA is concerned 28

about the technique that was used to collect the generated fog oil (especially the volatile fraction) for analysis that supports the Army's conclusions regarding minimal exposures as expressed in the PRE and the DEIS. Specifically, only 17 percent of the fog oil could be identified through chemical analysis. Given this fact, the EPA believes that the Army cannot state with certainty that all of the toxics have been accounted for in this complex chemical mixture, and that the remaining 83 percent is harmless. Another problem with the data is that reference doses or cancer slope factors either were not presented by the Army, or they do not exist from which to calculate potential adverse health effects for the majority of the chemicals already identified in the generated fog oil.

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The EPA recommends a reanalysis of the oil fog with samples taken from the farthest practical distance from the generator to determine if more components of this complex chemical mixture can be identified (especially the volatile fraction). According to the Army, the bulk of the volatiles (over 90 percent) are expected to be in the oil itself, not in the free hydrocarbon phase in the atmosphere. The Army used a SUMMA canister to collect oil for analysis, but the technique used, in all probability, did not account for all the toxic components in the fog oil. The volatile fraction, BTEX and POM (i.e., Hazardous Air Pollutants) and 1,3-butadiene, may not have been completely recovered from the SUMMA canister because of the analytical technique used.

Specifically, if the majority of the toxics are indeed in the oil droplets, which could have adhered to the walls and bottom of the canister, then the analytical technique used to analyze the volatile fraction only accounted for part of the toxics data. As this data was then used in the risk calculations, the analytical technique used could have biased the results with a Type II sampling error where the concentration terms introduced in the risk equations were lower than actual environmental conditions. A major uncertainty in the validity of the risk calculations may now be introduced, that being underestimating the human health risk. There was also no back-up confirmation of the toxic volatile data with another sampling technique. The EPA strongly recommends that another sampling effort be conducted using a sampling technique that accounts for the presence of toxics in the volatile hydrocarbon phase and in the oil phase of its distribution.

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Finally, the executive summary refers to the non-carcinogenic properties of SGF-2 fog oils manufactured under military specification MIL-F-12070C (1986) and proposed under new specification MIL-E-12070E, both of which require that SGF-2 type fog oils be blended and tested to contain non-carcinogenic constituents. The data presented in the DEIS are reported to be representative of SGF-2 fog oils produced under the 1986 specification. One item which is not addressed in this test regime is the practice of blending SGF-2 fog oils with flow modifiers such as kerosene, diesel fuel, or JP-8 when ambient temperatures fall below 32°F. Section 2.2.1 of the portion of this report entitled, "A Literature Review," states that when ambient temperatures range between +32 and °F that the SGF-2 fog oil be cut 25 percent on a volumetric basis and 40 percent when the ambient temperatures range between 0 and -25°F. It is a certainty that the winter seasonal daytime temperatures will fall below +32 and likely that there will be a

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few days with sub-zero daytime temperatures. The addition of these flow modifiers will significantly alter the chemical composition of the SGF-2 fog oil and the resultant risk of exposure to carcinogenic and toxic compounds. The EPA strongly recommends that the Army commit to not using cold weather modifiers for use during cold weather, or conducts appropriate testing of generated fog oil to ensure that additional health impacts are not created.

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Compliance with the Clean Air Act (CAA)

The DEIS references the appropriate the EPA CAA documents and regulations, but it fails to demonstrate that Prevention of Significant Deterioration (PSD) increments or NAAQS for PM^{10} will not be exceeded if any of the three alternative training method scenarios are initiated. Much of the FLW installation is considered ambient air because there are no physical barriers, e.g., fence, to prevent the public from entering many of the areas on the facility. This means that concentrations on the facility, as well as concentrations beyond the facility's boundaries, should be considered.

The Missouri Department of Natural Resources (MDNR) issued a PSD permit on June 7, 1995, for the increased training activities at FLW that allows a maximum use of 65,000 gallons of SGF-2 fog oil during a 12-month period and includes an hourly and a daily limit of 481 gals or 2600 lbs. of PM_{10} emissions. In addition to the many limitations on training locations, meteorological conditions, oil content, and operating times, the generating equipment was limited to a Model M3A3 smoke generator. The MDNR used the EPA's non-reactive Industrial Source Complex Short-Term air dispersion model, draft version dated December 6, 1994, for its analyses. The predicted 24-hour PSD increment is 30 micrograms per cubic ($\mu g/m^3$) which is the maximum allowed increase in PM_{10} concentrations in a Class II attainment area. The predicted annual increment is 11 $\mu g/m^3$, which is less than the allowed increment of 17 $\mu g/m^3$. Therefore, any daily increase in PM_{10} emissions due to increased fog oil use will cause the predicted 24-hour PSD increment to be exceeded. There also are predicted 24-hour exceedances of the PM_{10} NAAQS, but the FLW activities do not, at this time, have significant contributions to these exceedances.

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Each of the three alternative training methods, Relocate Current Practice (RCP), Optimum Training Method (OPTM) and Environmentally Preferred Training Method (EPTM) discussed in the DEIS, has daily PM_{10} emissions that exceed the approved limits specified in the PSD permit. The DEIS states that all activities will comply with current MDNR permit requirements and no NAAQS or PSD increments will be exceeded. It also states that the PSD permit will be modified, or a new PSD permit obtained, and if necessary PM_{10} emission off-sets will be obtained from on-base and/or off-base facilities in order to allow the increased training. However, it is not sufficient to state that NAAQS or PSD increments will not be exceeded. The FEIS must demonstrate, through appropriate modeling and on-the ground confirmation, that the concentrations predicted with the various obscurant training scenarios will not cause any air quality problems. Possible PM_{10} emission off-sets should be identified as to location and magnitude. The effects of any PM_{10} off-sets must be shown.

The following table compares the various operating scenarios and shows exceedances of the PM_{10} PSD increments. The gallons and pounds (lbs.) per hour, and the PM_{10} emissions, for the RCP, OPTM and EPTM scenarios use the same assumptions/analyses that the MDNR used in the PSD permit. The predicted increment concentrations were obtained by calculating the ratio of the new gallons/year or gallons/day to the PSD data and multiplying these ratios by the predicted PSD concentrations.

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FORT LEONARD WOOD OBSCURANT SMOKE TRAINING SCENARIOS

SGF-2 OIL	PSD	RCP	OPTM	EPTM
GALLONS/YEAR	65000	125000	84500	49500
GALLONS/DAY	481	1900	1200	1200
GALLONS/HOUR	481	1900	1200	1200
LBS. SGF-2/HOUR	3700	14592	9216	9216
LBS. PM_{10}/HOUR	2600	10214	6451	6451
24-HOUR PM_{10} INCREMENT STANDARD ($\mu g/m^3$)	30	30	30	30
24-HOUR PM_{10} INCREMENT ($\mu g/m^3$)	30	**119**	**75**	**75**
ANNUAL PM_{10} INCREMENT STANDARD ($\mu g/m^3$)	17	17	17	17
ANNUAL PM_{10} INCREMENT ($\mu g/m^3$)	11	**21**	14	8

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If Table 3.3: Results of the Six Test Cases Using the Gaussian Model, in Appendix E of the Final Report, *Evaluation of Human Health Risks Associated with Fog Oil Training at Fort Leonard Wood, Missouri*, September 1996, represents expected concentrations, then the predicted concentrations resulting from any of the three alternative training methods become much larger. The number and the magnitude of exceedances of the PM_{10} NAAQS and PSD increments would greatly increase. The emissions used in this modeling result from the use of only 80 gallons per hour of SGF-2 fog oil. Therefore, the short-term concentrations, if the RCP alternative is adopted, will be about 24 times higher than those in Table 3.3. Short-term concentrations resulting from adopting either the OPTM or EPTM alternatives would be about 15 times higher than those in Table 3.3.

Usually 30-minute concentrations are accepted as representing one-hour concentrations. Assuming that these concentrations are representative of one-hour concentrations, then the worst case 24-hour concentration at 40 kilometers (KM)from a release site for the RCP alternative for cases 1-4 would be about 267 $\mu g/m^3$, Case 4 (1900 gals/hr/80 gals/hr*270 $\mu g/m^3$/24 hours). The concentration is nearly double the 24-hour NAAQS of 150 $\mu g/m^3$ for PM_{10} and about 9 times the 24-hour PSD increment of 30 $\mu g/m^3$. Concentrations would be higher at distances closer to the release site. Twenty-four hour concentrations resulting from adopting either the OPTM or EPTM alternatives would be about 169 $\mu g/m^3$ at 40 KM. Even with a more likely meteorological condition, Case 2, the 24-hour PM_{10} increment would be exceeded at 10 KM from a release site under the RCP alternative (34 $\mu g/m^3$). (Cm^* data for Case 5 and Cm and Cm^* data for Case 6 are missing from Table 3.3 as are the assumptions for these cases in Table 3.2). The Army needs to include a complete discussion in the FEIS of how CAA standards will be met, including what modeling and monitoring activities will occur. The monitoring plan should be included or referenced in the ROD for the project. 33

Structure of the Ecological Risk Assessment (ERA) Addressing Impacts of Fog Oil to the FLW Ecosystem

While the approach taken in the ERA for selected amphibians, reptiles and birds is straightforward and relatively transparent, there are significant deficiencies evident in the document. Given the fundamental nature and scope of these deficiencies, the uncertainty of the results of the ERA are unacceptable, the conclusions of risk or no-risk are indeterminant, and the risk characterization to receptors is incomplete. While EPA's comments pertain specifically to the ERA for selected amphibians, reptiles, and birds, the concerns we have regarding exposure characterization and toxicity are equally relevant to the analogous sections in the ERA for Indiana Bats, Gray Bats, and Bald Eagles at FLW. For example, all exposure characterizations were based on modeled fog oil exposure concentrations rather than empirical measurements. The implementation of a comprehensive biological monitoring plan for the project will be a critical to verify conclusions presented in the ERA. The Army needs to address all of the concerns raised regarding the ERA in the FEIS for this project. 34

The evaluation of toxicological effects considered only direct contact with fog oil; all indirect effects were omitted from the effects characterizations. The text states that the ERA evaluated effects to populations for each species, yet the measures of effects included only mortality resulting from direct exposures. The ERA lacks adequate measurement endpoints to assess effects on populations rather than individuals. 35

While the text states that the ERA for amphibians, reptiles, and birds was conducted in response to U.S. Fish and Wildlife Service and public "concerns," there is a complete absence of documentation regarding the planning process. This includes the selection process for assessment endpoints, conceptual model development and associated risk hypotheses, details of the analysis plan, and description of the risk management objectives. The Army needs to fully 36

document the planning process and/or reference in the ERA the portion of the FEIS that describes it. 36 cont

Exposure Characterization

The ERA states that chronic exposures are assessed over the lifespan of each organism. The ERA, however, explicitly states that it is focused on adults of each species. This approach ignores entirely the increased susceptibility of sensitive life stages (e.g., egg, larva, nestling, or other juvenile stages) to stressors such as fog oil. In addition, the life histories of all of the Receptors of Concern (ROCs) are temporally asynchronous with the planned fog oil training activities. The quantification of this asynchrony with regard to chronic exposures is apparently resolved through the exposure duration (= lifespan) term in the exposure calculations. The ERA and FEIS should include the rationale for resolving this exposure relationship in this manner. 37

The exposure calculations include ingestion as an exposure pathway, but fail to include secondary food chain effects, such as adverse effects on prey organisms, reduced abundance of forage species, and possible adverse behavioral effects related to feeding. Section 4.3.1 explicitly states that density of northern bobwhite may depend on availability of food and cover. Section 6.4 states that rats chronically exposed to fog oil exhibited suppressed feeding, and Section 6.7 states that coating of avian feathers with petroleum products may inhibit thermoregulation, buoyancy, and escape from predators. 38

The text states that the exposure point concentrations were calculated using the "worst-case" scenario based on the maximum fog oil usage allowable at the site. These calculations, however, are flawed; they fail to accurately represent the frequency, duration, and intensity of potential exposures in the designated training area. The yearly and daily maximum quantities of fog oil usage fail to provide any spatial or temporal details as to which or how many of the six sites designated for mobile training and three sites designated for static training FLW will use. Consequently, the maximum calculated exposures may underestimate actual exposures owing to "edge" effects where two or more training "effect" areas overlap. 39

The characterization of inhalation exposures is represented by concentration isopleths under varying Pasquill conditions. This characterization, however, fails to consider the mean particle size of the fog oil droplets with distance from point of generation. The text of Section 2.4 states that individual particles of aerosolized fog oil get smaller as they move through the atmosphere away from the source. The ability of aerosolized fog oil constituents to move through biological membranes is likely related to particle size, and the relationship between droplet concentration, size, and membrane permeability is left unaddressed in the ERA. The inhalation exposure characterization should incorporate this information, and in addition, this section should state the mean particle size of the individual studies serving as the sources for the inhalation toxicity reference values. 40

The characterization of exposure incorporates assumptions that are contradicted by other information within the DEIS. The assumptions that only one training event would occur at a time, that all static training would occur in Ballard Hollow, and that all mobile fog oil training would occur from one location are inaccurate representations of the actual planned training activities. Although more complex to complete, the exposure characterization should reflect the more highly diverse training scenarios actually envisioned at FLW. In addition, because detailed training schedules and exact locales of fog oil training, including the possibility of simultaneous use of separate training locations, were not utilized in the ERA, no definitive conclusions may be drawn regarding the incidence of chronic adverse effects on receptors exposed through multiple training locations. 41

The exposure pathway shown in Figure 9 for the green frog indicates that frog embryos may absorb the stressor through the egg sac. The exposure calculations for this receptor, however, fail to include this route of exposure. Similarly, the exposure pathways for the eastern yellowbelly racer shown in Figure 10, the northern bobwhite shown in Figure 11, and the American robin shown in Figure 12, omit the exposure of eggs to the stressor, although the toxicity characterization explicitly identifies absorption of oils through eggshells (avian) as having significant toxicity. 42

The intake calculations for adult northern bobwhites are likely underestimated owing to the omission of incidental ingestion. As stated in Section 4.3.3, dust bathing may provide a significant exposure route for bobwhites. Furthermore, the intake for chicks, a more sensitive life stage, may exceed that of adults, since insects comprise the bulk of the diet of chicks. 43

Assessment Endpoints

The criteria used for selection of ROCs omit the essential criterion of sensitivity to the stressor of interest. The species selected may not represent sensitive species existing within the "effect" areas for fog oil training. While the ERA may accurately characterize risks to these selected organisms, the fog oil exposures deemed to be protective for them may not be protective for other more sensitive organisms and organisms that also may be of greater ecological relevance to the natural systems of concern. 44

Other than brief descriptions of climax vegetative communities, the site descriptions for the smoke training areas are devoid of endemic biota descriptions. Particularly since some of the designated areas are contained within National Forest lands for which this information should be reasonably available, Army should include descriptions of these species in this section. Furthermore, the Army should describe the relationship (i.e., ecological relevance) between these species and the selected assessment endpoints. 45

Risk Characterization

The stressor characterization in Section 5.2 provides incomplete information. The text states that there is no exact formulation for fog oil and further states that a number of potentially toxic constituents, including heavy metals, may be present. In addition, at several points in the ERA, statements are made regarding changes in the specification of fog oil to "reduce aromatic hydrocarbons" or "remove[s] a significant proportion of polyaromatic hydrocarbons." At no point, however, does the ERA explicitly state that no aromatics are found in the current formulation of fog oil. 46

The description of the M56 smoke generator includes capability for infrared smoke obscuration. If planned training activities include infrared smoke obscuration, FLW must evaluate in the ERA any added ingredients necessary for this training scenario. In Table 6 of Section 5.6, the quantity of fog oil for the EPTM alternative, training activity 7.2 (Static Smoke), is less than that quantity for this same activity shown in Table 9 on page 51. This discrepancy should be resolved. 47

The characterization of effects focuses on toxicity only as an endpoint and incorporates a number of assumptions about the test species used to derive the toxicity reference values and the species of concern. Other than extrapolations based on the duration of the toxicity test relative to a chronic no observed adverse effect level (NOAEL) and taxonomic extrapolations, the characterization of effects fails to quantify or qualify the uncertainties associated with these assumptions. 48

The ERA should include the results of the previous studies conducted at Fort McClellan regarding fog oil bioaccumulation. Although no residual concentrations were identified during the 1996 3D Environmental study, previous studies indicate that the winter season may be the worst period for adverse effects owing to the increased solubility of hydrocarbons at lower temperatures and the seasonal increase in lipid content of a number of receptors. 49

The risk characterization fails to include an analysis of uncertainties inherent in each phase of the ERA. Absent this analysis, including an estimate of the magnitude and direction of influence (i.e., over or underestimation) on risks, the ERA conclusions are largely unsubstantiated. 50

Assessment Endpoints

The ERA states that fog oil can accumulate in food chains, especially in aquatic situations. The assessment endpoints, however, fail to include any receptors of concern that are predominantly aquatic in their life history. In addition, for the one receptor that has an aquatic larval stage, the ERA omits any exposure calculation for this sensitive stage of this receptor's life history. 51

Enclosure B - EPA's Draft EIS Rating System under Section 309 of the Clean Air Act

Environmental Impact of the Action

LO--Lack of Objections

The EPA review has not identified any potential impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC--Environmental Concerns

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

EO--Environmental Objections

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU--Environmentally Unsatisfactory

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

Adequacy of the Impact Statement

Category 1--Adequate

The EPA believes that draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2--Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analysis, or discussion should be included in the final EIS.

Category 3--Inadequate

The EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

F-USEPA.01	As discussed in response to Environmental Protection Agency comment number 3 (F-USEPA.03), subsection 5.1.4.2 has been modified to include a discussion of training activity environmental controls that have been adapted for fog oil training (TGs 7.2, 7.3 and 7.4). Limits are based on the current air quality permit issued by the State of Missouri. The current fog oil air permit has been included in Vol. III, Appendix J. An overall Monitoring Plan Summary has been developed in conjunction with USEPA and MDNR and included in Vol. III, Appendix K.
F-USEPA.02	Text has been added at subsection 5.2.2.15.B.1 to further explain the extent and completeness of the fog oil analysis. Further explanation to address this issue has been included in FEIS subsections 5.2.2.15.B.1 (human health), 5.2.2.11.A.2.1 (T&E species), and 5.2.2.11.B.4 (other protected species). Text has been added at subsection 5.2.2.15.B.1 to highlight the fog oil analytical results which support the conclusion that fog oil generators do not alter the chemical composition of fog oil. Although chemical analyses of liquid fog oil and fog oil smoke provide strong evidence that fog oil composition is not altered by generators, the Army has committed to test fog oil smoke for mutagenicity. This testing program is described in subsection 5.2.2.15.B.1. As part of the fog oil Air Permit, monitoring (as described in Vol. III, Appendix K of the FEIS) will be conducted at FLW concurrent with fog oil training. We anticipate the monitoring will confirm safe levels in the cantonment areas and off-post. The Adaptive Management Strategy plan (contained in Appendix K of the FEIS) will be used to identify and mitigate any concerns identified during monitoring. Finally, the Public Awareness Program (contained in Vol. III, Appendix L of the FEIS) will be used to inform the public on issues of concern.
F-USEPA.03	Subsection 5.2.2.15.B.1 has been modified to further address off-site migration of fog oil including results of site-specific modeling under wind directions and atmospheric states required by the FLW air permit for fog oil training. The modeling was used to predict concentrations at the FLW boundary and at the edge of the FLW cantonment area, and addresses anticipated exposure concentrations for the general public. Subsection 5.2.2.15.B.1 further elaborates on methods used to evaluate health effects by the PRE and documents why the PRE is more than just a "workplace" health evaluation. The fog oil Air Permit for training at FLW places restrictions on such factors as wind direction, speed and stability for the different fog oil training areas which have been designated for use at FLW. These site specific conditions are designed to direct the fog oil obscurant cloud away from general populations on-post, and provides for the greatest practical distance between training sites and the facility boundary.

F-USEPA.03 (cont.)	Models predict that concentrations will be much lower than 5 mg/m^3 at the facility boundary under the wind conditions specified for fog oil training sites at FLW. It is possible that unexpected wind shifts beyond those allowed in the air permit have the potential to blow fog oil into the cantonment area at FLW and beyond facility boundaries. Training is to be halted when wind direction shifts beyond permit specifications, and this action is expected to limit exposure duration and concentration to safe levels (with large safety margins to spare) for the general population. Additional text has been added to subsection 5.2.2.15.B1 of the FEIS and to the PRE to describe application of the PRE for deciding safe exposure levels for the general population.
F-USEPA.04	Compliance with the MDNR Air Permit, and any future permits which may be granted, will ensure that the PSD increment and NAAQS will not be exceeded. The Army will comply with all fog oil permit conditions at the time training is conducted. Dispersion modeling, which has been coordinated with USEPA and MDNR, has been conducted for the three fog oil alternatives. The results have been incorporated into subsections 5.2.2.3.7 and 5.5 of the FEIS, respectively, and compared to applicable standards. The fog oil permit has been included in the FEIS in Vol. III, Appendix J and referenced in subsections 5.2.2.3 and 5.2.2.10. A summary of the air permit has been included in subsection 5.2.2.3.7. See Environmental Protection Agency comment (F-USEPA.06) for additional discussion regarding overall monitoring. Monitoring plans that are in "draft" form have been clearly identified as such. Additional text has been added to subsection 5.2.2.3.7 to address this issue.
F-USEPA.05	Additional dispersion modeling for particulate has been performed for the cumulative analysis. Air emission sources included in the model as well as background concentrations were coordinated with both MDNR and USEPA. FFE training and the smoke pots and smoke grenades are included in the cumulative modeling. Vehicle exhaust is typically not a significant source of particulate emissions. However, the particulate emissions from unpaved roads during training may be significant, and therefore have been estimated and included in the cumulative modeling. The CDTF incinerator is not part of the OPTM Alternative. Subsection 5.5 has been modified to include the cumulative air quality impact analysis and results.
F-USEPA.06	As discussed in response to Environmental Protection Agency comment number 3 (F-USEPA.03), subsection 5.1.4.2 has been modified to include a discussion of training activity environmental controls that have been adapted for fog oil training (TGs 7.2, 7.3 and 7.4). Limits are based on the current air quality permit issued by the State of Missouri. The current fog oil air permit has been included in Vol. III, Appendix J. An overall Monitoring Plan Summary has been developed in conjunction with USEPA and MDNR and included in Vol. III, Appendix K.
F-USEPA.07	See response to Environmental Protection Agency comment number 3 (F-USEPA.03) and Ozark Chapter Sierra Club comment number 23 (G-OCSC.23).

F-USEPA.08	Subsection 5.2.2.11.B has been modified to provide additional information on the ERA process, including information on the selection of species for review in the EIS (tied to Appendix F in Volume III), selection of the species for review in the ERA, how the results from the ERA can be applied to other species, and how the results of the ERA address all stages in life of the selected biological species. Under the state of the art, no better prediction of effects can be made.
F-USEPA.09	Comment noted. Extensive coordination has occurred between the Army and USEPA to clarify concerns leading to the USEPA rating assigned to the DEIS, and the FEIS address these concerns. See response to all USEPA comments.
F-USEPA.10	The Army has committed to test fog oil smoke for mutagenicity. This testing program is described in subsection 5.2.2.15.B.1.
F-USEPA.11	There is no regulatory requirement to conduct the desired BTEX and POM/PAHs testing; therefore parameters will need to be established by the Army in coordination the USEPA. The overall BRAC monitoring plan is summarized in Appendix K, of the FEIS, Vol. III. The Army anticipates that results of additional testing conducted prior to the start of training will demonstrate safe concentrations and therefore may reduce or eliminate the extent of additional monitoring requested by USEPA. The report the National Academy of Science, Committee on Toxicology, is expected to issue and the expected statement from NIOSH will also be a factor in consideration of monitoring requirements.
F-USEPA.12	The Army will establish a bio-monitoring program as discussed in subsection 5.5.1.2.3.
F-USEPA.13	Vol. III, Appendix L has been added to the FEIS to address the request for a Public Awareness Program which will be in place prior to the start of fog oil training at FLW. Subsection 5.5.7 of the FEIS has been modified to address this issue.
F-USEPA.14	As discussed in the response to the Ozark Chapter Sierra Club comment number 11 (G-OCSC.11), the Army's current plan is not to use additives when the temperature of the oil drops below 32 degrees fahrenheit, and the Army is committed to the air permit restrictions in effect when training begins. Two heated buildings will be constructed to keep fog oil warm so the viscosity is low enough to support training. A statement to this effect has been added to subsection 5.1.4.2 of the FEIS.
F-USEPA.15	The NAS report findings were not available for inclusion in the EIS. If the report is issued in a timeframe that makes it practical, findings will be incorporated in the FEIS and considered in the preparation of the Record of Decision for the Action.
F-USEPA.16	The USEPA Region VII will be provided a copy of the Draft ROD and may comment if they desire.

F-USEPA.17	The Army consulted with the National Institute for Occupational Safety and Health (NIOSH) on 12/16/96 to determination if the 5 mg/m^3 TLV-TWA standard for mineral oil mist is appropriate to protect trainees and instructional cadre during fog oil training. NIOSH agreed to review the matter and issue a statement on the subject by early January 1997. Assuming this schedule is met, this information will be incorporated in the fog oil human health subsection at 5.2.2.15.B.1 of Vol. 1 of the FEIS and in the PRE.
F-USEPA.18	The Army has been conducting fog oil training for a number of years and has used fog oil obscurants in combat on many occasions. The Army is not aware of human health problems that have resulted from fog oil exposures received during training or combat. Because there have been no health indicators to demonstrate effects, this detailed review is not considered necessary.
F-USEPA.19	The 25mg/m^3 emergency TLV was not presented as an exposure limit in the PRE or DEIS. There is great uncertainty with modifying a TLV to apply to the general population. Alterations of the TLV standard to transform it to a short-term exposure level (STEL) for the general public should not be made until National Academy of Science (NAS) findings are reported. If the NAS report is released before the EIS is final, protective standards addressed by NAS will be added to subsection 5.2.2.15.B.1 of Volume 1 of the FEIS and the human health preliminary risk evaluation (PRE) report. Confirmation of safe exposure levels in the FLW cantonment areas and off-post will be provided by monitoring conducted prior to and in association with the fog oil training air permit (see Appendix K, Vol. III of the FEIS). The Adaptive Management Strategy plan (see Appendix K, Vol. III) will be used to mitigate any concerns identified during monitoring. Finally, the Public Awareness Program (Appendix L, of the FEIS, Vol. III) will be used to inform the public on issues of concern.
F-USEPA.20	The PRE did not propose using 40 mg/m^3 as a STEL for the general population. Furthermore the STEL established by ACGIH for mineral oil mist in industrial settings is currently undergoing re-evaluation. Decisions on an appropriate STEL standard for the general public should not be made until the National Academy of Science (NAS) findings are reported. If the NAS report is released before the EIS is final, protective standards addressed by NAS will be added to Section 5.2.2.15.B.1 of Volume 1 of the FEIS and to the human health preliminary risk evaluation (PRE) report. It is considered unlikely that fog oil exposures to the general public will exceed an exposure concentration of 5 mg/m^3 (i.e., the TLV-TWA occupational health standard established for mineral oil mist in the air) at a frequency and duration to affect human health. A Public Awareness Program will be used to inform the public on issues of concern. Confirmation of safe exposure levels in the FLW cantonment areas and off-post will be provided by monitoring conducted prior to and in association with the fog oil training air permit (see Appendix K, Vol. III). The Adaptive Management Strategy plan (see Appendix K, Vol. III) will be used mitigate any concerns identified during monitoring. Finally, the Public Awareness Program (Appendix L, Vol. III) will be used to inform the public on issues of concern.

F-USEPA.21	The issue of infrequent exposure to low concentrations of fog oil (well below 5 mg/m^3) over a lifetime, has been addressed in more detail in subsection 5.2.2.15.B1 of the FEIS.
F-USEPA.22	As discussed in response to Environmental Protection Agency comment numbers 3 (F-USEPA.03) and 4 (F-USEPA.04), subsection 5.1.4.2 has been modified to include a discussion of training activity environmental controls associated with fog oil training (TGs 7.2, 7.3 and 7.4). The EIS, and the fog oil training air permit, identify specific locations that may be used for smoke training. However, it is not possible to describe exact training schedules or the duration of each training event since the air quality permit establishes numerous restrictions related to weather conditions. Therefore, the Army will need to select training locations from those approved for fog oil training, and modify schedules and the duration of individual training events on a regular basis to accomplish the required level of training while complying with permitted conditions.
F-USEPA.23	In the assessment of health effects of fog oil training, the Army has assumed that the tiny fog oil droplets making up the obscurant cloud will be inhaled into the deep recesses of the lungs and addresses this potential on page 19 of the Human Health Literature review in Appendix D of the human health preliminary risk evaluation (PRE). Fog oil inhalation studies with laboratory animals have been conducted with oil droplets in the 2.5 μ range or less. Results from these studies were part of the weight-of-evidence used to assess the inhalation effects of fog oil. Confirmation of safe exposures in the FLW cantonment areas and off-post will be provided by monitoring conducted in association with the fog oil training air permit (see Appendix K, Vol. III). The Adaptive Management Strategy plan (see Appendix K, Vol. III) will be used to mitigate any concerns identified during monitoring. Finally, the Public Awareness Program (Appendix L, Vol. III) will be used to inform the public on issues of concern. It is impossible to completely eliminate the potential for fog oil exposure to the general public and continue to meet smoke training requirements: however, the Army's proposed action (OPTM Alternative) does reduce the risk when compared to the RCPA Alternative. When this is considered in conjunction with fog oil use restrictions in the FLW fog oil training permit, the general public will be protected from exposure concentrations, frequencies, and durations that have the potential to affect health.
F-USEPA.24	Subsection 5.2.2.15.B.1 of the FEIS and text in the preliminary risk evaluation (PRE) were modified to include additional information concerning the potential for fog oil to effect the "most sensitive" persons in the community (including children, women, elderly, etc.). The exposure times and durations assumed for the PRE and those considered when establishing the OSHA/ACGIH protective standard are estimated to be much greater than those exposures anticipated for the general public. The FLW fog oil training air permit places restrictions on such factors as wind direction, speed and stability for the different fog oil training areas projected for use at FLW.

F-USEPA.24 (cont.)	These site specific conditions are designed to direct the fog oil obscurant cloud away from general populations on-post, and provides for the greatest practical distance between training sites and the facility boundary in order to mitigate harmful exposures to the general public off-post. Confirmation of safe exposures in the FLW cantonment areas and off-post will be provided by monitoring conducted in association with the fog oil training air permit (see Appendix K, Vol. III). The Adaptive Management Strategy plan (see Appendix K, Vol. III) will be used to mitigate any concerns identified during monitoring. Finally, the Public Awareness Program (see Appendix L, of the FEIS, Vol. III) will be used to inform the public on issues of concern.
F-USEPA.25	See response to Environmental Protection Agency comment number 10 (F-USEPA.10).
F-USEPA.26	As pointed out in response to Environmental Protection Agency comment number 24 (F-USEPA-24), the PRE was not gender and age specific. There is no evidence that ozone is or will be present in unhealthy concentrations as a result of fog oil training. The air permit is structured in such a way that NAAQS for ozone and PM10 will be met at the FLW boundary and in the on-post cantonment area. These standards are considered protective of human health. The air permit also requires ambient air monitoring which will further ensure that NAAQS are being met. Air monitoring in accordance with the fog oil training permit will analyze for ozone and PM10 to confirm safe concentrations. With regard to estrogen mimickers, it is beyond the state of the knowledge of health science to determine health risks associated with PAHs that may have estrogen-like activity. This science is highly speculative and not well understood. Text has been added in the uncertainty section of the PRE to acknowledge these issues.
F-USEPA.27	See response to State of Missouri, Department of Natural Resources comment number 46 (S-MDNR.46).
F-USEPA.28	See response to Environmental Protection Agency comment number 2 (F-USEPA.02).
F-USEPA.29	The methodology used by Battelle to sample and extract VOCs from the SUMMA sampler is a recognized method and has been demonstrated to capture the greatest percent of the VOC in samples. Re-sampling and reanalysis for the fog oil components is not warranted as the sampling and analytical methods used are state-of-the-art. Analytical results are more definitive than any other fog oil chemical characterization performed in past research. The analyses performed on fog oil are comparable to the most rigorous chemical characterizations performed on other petroleum products (e.g., crude oils, fuels, lubricating oils, mineral oils, etc.), and quantify the concentrations of petroleum compounds that are of significant human health concern.

F-USEPA.29 (cont.)	As part of the fog oil Air Permit, monitoring (as described in Vol. III, Appendix K of the FEIS) will be conducted at FLW concurrent with fog oil training. We anticipate the monitoring will confirm safe levels in the cantonment areas and off-post. The Adaptive Management Strategy plan (contained in Appendix K of the FEIS) will be used to identify and mitigate any concerns identified during monitoring. Finally, the Public Awareness Program (contained in Vol. III, Appendix L of the FEIS) will be used to inform the public on issues of concern.
F-USEPA.30	As discussed in the response to Ozark Chapter, Sierra Club comment number 11 (G-OCSC.11) and Environmental Protection Agency comment number 27 (F-USEPA.27), the Army has committed to not using other additives in the fog oil when temperatures are low as has been common practice at other locations. A statement to this effect has been added to subsection 5.1.4.2 of the FEIS.
F-USEPA.31	See response to Environmental Protection Agency comment number 4 (F-USEPA.04). The definition of ambient air as applied to FLW was coordinated with MDNR and USEPA, limits ambient air to the area beyond FLW boundaries, and within the boundaries of the Cantonment area. Based on additional coordination with USEPA, it has been agreed that FLW will develop a Public Awareness Program. This program is defined in more detail in Vol. III, Appendix L. During the fog oil air permit review, combustion of unleaded gasoline in the pulse-jet engine was evaluated and emissions determined. The Chemical School plans to use generators which use diesel fuel. The emissions from diesel fuel combustion have been calculated and included in the FEIS. Subsection 5.2.2.3.7 has been modified to include these emissions. The existing permit specifies the use of the M3A4 generator, but FLW has been provided approval from MDNR to use any smoke generating equipment which is functionally equivalent to models M3A3 and M3A4 smoke generators and does not result in emissions of regulated pollutants of a different type or in an emissions increase above the cumulative or rate limits in the permit. Offsets will be identified and analyzed during the permit revision process, if necessary. Offsets may not be required if increases can be achieved through other mechanisms such as improved modeling, better background data, or other air quality variables. An additional impact analysis table, similar to the one proposed by USEPA, has been developed based on additional modeling and incorporated in subsection 5.2.2.3.7.

F-USEPA.32	The modeling that was cited in the fog oil human health literature review report was included to provide a general sense of potential exposure and should not be compared to air permit modeling. The fog oil dispersion results cited in the human health literature review were based on a generic model. The actual modeling considered by the PRE in the evaluation of human health was the same as the modeling used to estimate risk to T&E species. This modeling was much more conservative than the modeling cited in the Driver, et. al. (1993) report. Modeling conducted for the air permit used an USEPA and MDNR approved model.
F-USEPA.33	See response to Environmental Protection Agency comments 4 (F-USEPA.04) and 31 (F-USEPA.31). Additional dispersion modeling has been conducted for all three fog oil alternatives and results have been incorporated in subsection 5.2.2.3.7. The Army will conduct air monitoring one year prior to the start of fog oil training and during training. This monitoring program has already been initiated at FLW. Monitoring includes both particulate and ozone. An overall Monitory Plan Summary and Adaptive Management Strategy have been included in Vol. III, Appendix K of the FEIS. The FEIS will include the Air Monitoring Plan Summary and Overall Monitoring Plan in the repositories.
F-USEPA.34	The ERA is complete. The document has been modified to provide clarification.
F-USEPA.35	The ERA describes direct effects for inclusion in the EIS. Results of the study completed at Fort McClellan do not indicate indirect effects are likely. Additionally, results of the biomonitoring plan will be used to identify indirect effects. There is no available information about the effects of new fog oil on prey species or food sources other than mammalian toxicity values. Population measurement endpoints are not available. Indirect effects can only be addressed qualitatively. See the response to Environmental Protection Agency comment number 8 (F-USEPA.08). We will incorporate a more detailed discussion of indirect effects based on results of our studies at Fort McClellan.
F-USEPA.36	The comment regarding endpoint selection is applicable to the ERA completed for birds, reptiles, and amphibians, but not to the Endangered Species BRAC ERA. For the latter, input from the USFWS was the basis for endpoint selection.

F-USEPA.36 (cont.)	Per coordination with USEPA, an Appendix has been added to the ERA (and referenced in the EIS) for birds, reptiles, and amphibians that documents the process used to select assessment endpoints. This Appendix includes a discussion of the appropriateness and ecological significance of species studied, and identifies how these studies relate to species present on the installation that were not selected as assessment endpoints. Additional species have been studied to identify if exposure dosage and potential for risk is higher than in those species initially selected for study. Incorporation of the conceptual site model development, associated risk hypothesis, details of the analysis plan, and description of the risk management objectives are not mandatory requirements of an ERA. The ERA was performed to determine if there was the potential for risks from fog oil and will not be used in any type of risk management process. The ERA provided a limited conceptual site model that provides the reader with the information required. The conceptual site model (Figure 1) is straightforward. A description of the process used to develop the simple model is not necessary.
F-USEPA.37	We completed an ERA for sensitive life cycles in the both the Endangered Species BRAC ERA, and the ERA for birds, reptiles, and amphibians. Results of these studies are similar to findings for adults of each species studied. Risk tables were developed for the following species and life stages: Endangered species: • bald eagles - egg; hatchling; juvenile • Indiana and gray bats - nursing pup; supplemental nursing pup Non-endangered species: • green frog - egg; tadpole • yellow-belly racer - egg; hatchling/juvenile • northern bobwhite - egg; hatchling; poult • robin - egg; hatchling; juvenile An additional explanation of intake equations (exposure parameters) has been added to the ERA, and is referenced in the EIS. See the response to Environmental Protection Agency comment number 36 (F-USEPA.36).
F-USEPA.38	See the response to Environmental Protection Agency comments numbered 8 (F-USEPA.08) and 35 (F-USEPA.35). A qualitative discussion of indirect effects has been added to the ERA. In this discussion, we have included the number of individuals likely to be affected, and the area over which effects will occur. This information can be used to determine population effects.

F-USEPA.38 (cont.)	The USEPA references studies documenting effects of fog oil on rats, and effects of petroleum products on birds. These studies are not applicable to "new" fog oil. PAHs and aromatic hydrocarbons have been significantly reduced in new fog oil through severe process treatment (e.g., severe hydrotreatment) such that the oil has low toxicity and exhibits no evidence of dermal carcinogenicity or mutagenicity. Studies documenting the constituents of fog oil both before and after it passes through smoke training generators are presented in the EIS.
F-USEPA.39	The ERA includes an analysis based upon the amount of fog oil to be used at each training location. The Army can not accurately predict training frequency, duration, or intensity at specific locations. Because it was not possible to predict these variables, the ERA assumes receptors will be exposed to all fog oil released at particular training sites. Risk to receptors are therefore conservatively estimated using this approach. We have added a discussion of this rationale in the Uncertainty Analysis.
F-USEPA.40	Available toxicity studies do not specify particle size. Membrane permeability is likely related to stressor solubility more than particle size. The ERA assumes all compounds in the fog oil inhaled, ingested, or deposited on the skin are absorbed (i.e., 100% absorption regardless of particle size). No studies of fog oil particle size in relation to membrane permeability, or absorption for wildlife are available.
F-USEPA.41	The ERA addresses effects of exposure to static and mobile fog oil training as separate issues. The ERA exposes each receptor to the entire amount of static training fog oil and the entire amount of mobile training fog oil for only one exposure point at a time. This approach estimates effects from the maximum release of 1,200 gallons of fog oil per day. This amount of fog oil would represent the maximum amount of fog oil that could be used on any given day under the Army's Proposed Action, although the actual amount of fog oil that would be used on most days would be much lower than the maximum level. Factors leading to a lower quantity of fog oil usage would include the training requirements of the classes being taught, the Pasquill category (atmospheric conditions), and other meteorological conditions. Additionally, as stated in subsection 3.3.3.7 and 5.5 training will be limited to a maximum of 481 gallons per day in accordance with the existing air quality permit. Consequently using the 1,200-gallon maximum release level, stated in the Army's Proposed Action, as the basis for the analysis provides a conservative analysis of impacts by stating the impacts at the maximum possible level. See the response to Environmental Protection Agency comment number 39 (F-USEPA.39).

F-USEPA.41 (cont.)	The potential for exposure to fog oil from multiple/simultaneous training events exists. It is not possible to predict the frequency of these exposure scenarios. The cumulative daily amount of these events would not exceed 1,200 gallons per day. The ERA therefore explicitly states the assumptions used to calculate exposure. We will add a discussion of this rationale in the Uncertainty Analysis, which allow for multiple, synergistic effects.
F-USEPA.42	This comment is not applicable to the Endangered species BRAC ERA. The ERA documents effects of absorption of materials through egg shells. No information exists to indicate fog oil passes through egg shells. We anticipate fog oil will evaporate within 24 hours. A sentence has been added to the ERA for clarification (low concentration that reaches the egg, low potential for absorption, and not enough time to cause harm, owing to low concentration of toxic hydrocarbons). See the response to Environmental Protection Agency comment number 37 (F-USEPA.37).
F-USEPA.43	This comment is not applicable to the Endangered species BRAC ERA. We focused calculations of exposure through ingestion of fog oil on ingestion of contaminated food. The ERA includes the assumption that all food ingested on training days was coated with fog oil. We believe this conservative estimate should account for any fog oil incidentally ingested during dust bathing and ingestion of material into the crop and gizzard. Further, studies of fog oil disposition indicate that disposition is minor and that biodegradation rates exceed any disposition rates. Therefore we believe that rather than underestimating risks, they have been overstated.
F-USEPA.44	This comment is not applicable to the Endangered species BRAC ERA. There is no information available to adequately characterize the relative sensitivity to fog oil for all wildlife species potentially occurring on the installation. See the response to Environmental Protection Agency comment number 36 (F-USEPA.36). The TRV was adjusted by application of uncertainty factors to account for sensitive receptors. The intent of the ERA is not to assess effects to all species.
F-USEPA.45	This comment is not applicable to the Endangered species BRAC ERA. The site description in the ERA describes the overall vegetative cover types and terrain of each training area. Information concerning site flora and fauna was sufficient for use in developing a predictive ERA. The ERA references the biota list provided in the EIS, and was not intended to be a complete list of all biota. Selected receptors are representative of others within similar taxonomic groups. We list criteria used to select receptor species in Section IV of the ERA.

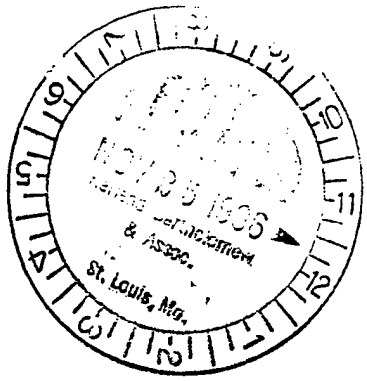
F-USEPA.46	Analysis of fog oil samples taken at FMC as part of the ERA analysis did not find aromatic hydrocarbons at levels that would exceed sample quantificaiton limits established by the laboratory conducting the sample analysis. A different sample of fog oil collected as part of a different portion of the EIS analysis an analyzed by Battelle Laboratories found detectable concentrations of aromatic hydrocarbons. These differences are assumed to be due the compositional differences between the two fog oils analyzed. Low levels of metals are expected to be in fog oils because they ar present in stock oil from which the fog oil is produced. The ERA assesses effects of exposure to whole fog oil, rather than exposure to individual constituents. While the concentration of various components of fog oil are known, the precise chemical constituents of fog oil are not completely known. Development of this information is beyond the scope of the ERA.
F-USEPA.47	The proposed action does not include use of infrared obscurants. Tables have been modified with the correct information.
F-USEPA.48	See the response to Environmental Protection Agency comments numbered 8 (F-USEPA.08) and 41 (F-USEPA.41). Chronic effects are taken into account when reference dose values are established.
F-USEPA.49	Results of the study are incorporated by reference in the ERA. See the response to Environmental Protection Agency comment number 8 (F--USEPA.08). Additional discussion of these results has been added in the ERA. We are unaware of any hydrocarbon that has increased solubility in colder temperatures.
F-USEPA.50	See the response to Environmental Protection Agency comment number 48 (F-USEPA.48).
F-USEPA.51	See the response to Environmental Protection Agency comment number 37 (F-USEPA.37) and Ozark Chapter, Sierra Club comment number 29 (G-OCSC.29). The ERA indicates old fog oil may accumulate in aquatic food chains. No information exists to indicate new fog oil will behave similarly, in fact, results of our study of the fate of fog oil at Fort McClellan show no such accumulation. Clarifying text has been added to the ERA.

State of Missouri, Department of Conservation
(S-MDC)

MISSOURI DEPARTMENT OF CONSERVATION

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JERRY J. PRESLEY, Director



November 20, 1996

Mr. Robert B. Bax
Harland Bartholomew & Associates, Inc.
400 Woods Mill Road South - Suite 330
Chesterfield, MO 63017

Dear Robert:

The Missouri Department of Conservation (MDC) appreciates the opportunity to provide comments on the Army's Draft Environmental Impact Statement (DEIS), regarding relocation of U.S. Army Chemical School and U.S. Army Military Police School to Fort Leonard Wood, Missouri. The DEIS is thorough and identifies potential impacts to forest, fish, and wildlife resources. The following comments are provided to identify options the Army can implement during and following relocation activities to ensure forest, fish, and wildlife impacts are minimized.

The Army's Proposed Action Alternative requires a smaller cumulative total of fog oil, compared to activities at Fort McClellan, Alabama. This reduced use of fog oil combined with shorter operating times of fog oil generators should decrease overall environmental impacts. However, identified smoke training activities affecting Indiana bat hibernaculums should be conducted during periods when bats are not using these sites, May through August. Conducting smoke training during these months, in areas of identified hibernaculums, will reduce the possibility of toxicological effects to Indiana bats due to inhalation of fog oil, TPA grenade smoke, and smoke pots. Brooks Cave is the main hibernacula within the installation and has been identified as a Priority 2 site. 1

The DEIS indicates gray bats in Saltpeter No. 3, a maternity cave, will experience toxicological effects. Conducting various smoke training activities from September through March in this area, a period when bats are not using this site, should reduce potential toxicological effects due to inhalation of smoke. 2

Controlling the time of day smoke training is conducted, total number of times a specific training site is used, and/or number of consecutive uses at a specific training site should reduce anticipated toxicological effects to foraging Indiana and gray bats. Bats are nocturnal and crepuscular animals being most active between dusk and dawn. Conducting training activities only during daylight hours in those areas where Indiana bats were captured in 1994, and during daylight hours around identified maternity and hibernacula caves will reduce potential impacts of inhalation of fog oil, TPA grenade smoke, and smoke pots. 3

A concern not addressed in the DEIS is nesting bald eagles within the boundaries of the installation. The number of nesting pairs within our state is on the increase. Given the presence of nesting birds along the Gasconade River and suitable nesting habitat within installation boundaries (e.g. Big Piney River and Roubidoux Creek), it seems only a matter of time before a nesting pair locate within Fort Leonard Wood.

MDC recommends that Fort Leonard Wood conduct annual surveys for nesting bald eagles. If a nesting pair is discovered on the installation, the same issues that were addressed in the Biological Assessment should be reviewed for nesting bald eagles. These issues include the effects of chemical contaminants, sound, and seismic conditions created or released during Fort Leonard Wood activities. **4**

MDC recommends a monitoring program, including both terrestrial and aquatic fauna, be established. A well developed and implemented monitoring program will document impacts to Missouri's forest, fish, and wildlife resources. The monitoring program should track potential impacts to both game, non-game, and threatened/endangered species. The MDC would like to provide technical support during the development of a monitoring program. **5**

The opportunity to review and comment is appreciated. Bob Ziehmer of my staff is available to address any questions you may have.

Sincerely,

Jerry J. Presley

JERRY J. PRESLEY
DIRECTOR

cc: Gary Frazer (U.S. Fish and Wildlife Service)
Kathy Mulder (Environmental Protection Agency)
Major General Clair F. Gill (Fort Leonard Wood, MO)

1	S-MDC.01	Training will be coordinated to the extent possible to limit potential impacts on Indiana bat hibernacula. Training will be conducted in accordance with the reasonable and prudent measures specified by the USFWS. See response to Heartwood comment number 6 (G-Hea.06).
2	S-MDC.02	Training will be coordinated to the extent possible to limit potential impacts on the gray bats in Saltpeter No. 3, a maternity cave. Training will be conducted in accordance with the reasonable and prudent measures specified by the USFWS. See response to Heartwood comment number 6 (G-Hea.06).
3	S-MDC.03	Training will be coordinated to the extent possible to limit potential impacts on the Indiana and gray bat populations. Training will be conducted in accordance with the reasonable and prudent measures specified by the USFWS. See response to Heartwood comment number 6 (G-Hea.06).
4	S-MDC.04	The BA addressed effects to nesting bald eagles. No effects are anticipated. This information will be clarified in subsection 5.5.1.2.3. Training will be conducted in accordance with the Endangered Species Act and reasonable and prudent measures specified by the USFWS. If nesting bald eagles begin to utilize areas affected by actions on the installation, additional Endangered Species Act compliance efforts will be initiated.
5	S-MDC.05	FLW will establish a biomonitoring program as discussed in subsection 5.1.4.3. Other species are currently monitored as discussed in subsection 4.11.2 and 4.11.3.

6

State of Missouri, Department of Natural Resources
(S-MDNR)

STATE OF MISSOURI Mel Carnahan, Governor • David A. Shorr, Director
DEPARTMENT OF NATURAL RESOURCES
OFFICE OF THE DIRECTOR
P.O. Box 176 Jefferson City, MO 65102-0176

November 25, 1996

Mr. Alan Gehrt
MRKEP-PR
U.S. Army Corps of Engineers
Kansas City District
601 E. 12th Street
Kansas City, Missouri 64106-2896

Dear Mr. Gehrt:

Staff within the Missouri Department of Natural Resources have reviewed the Draft Environmental Impact Statement (DEIS) for the proposed relocation of the U.S. Army Chemical School and the U.S. Army Military Police School from Fort McClellan, Alabama to Fort Leonard Wood, Missouri, as a result of the approved 1995 Base Closure and Realignment actions mandated by the Base Closure and Realignment Act of 1990. The DEIS describes the proposed relocation of military mission activities, construction of support facilities and relocation of personnel to Fort Leonard Wood.

We believe it to be important to point out the very unique historical circumstances associated with this proposed action relative to the National Environmental Policy Act process. These circumstances are as a result of the 1993 Defense Base Closure and Realignment Commission having directed the Department of the Army to pursue necessary environmental permits before submitting a recommendation to the 1995 Commission to relocate the U.S. Army Military Police School and the U.S. Army Chemical School to Fort Leonard Wood, Missouri. The U.S. Department of Defense recommendation to the 1995 Base Closure and Realignment Commission was based on the assumption that requisite permits could be granted to allow operation of the Chemical Defense Training Facility at Fort Leonard Wood, Missouri.

The Army subsequently prepared and submitted permit applications to this department in 1995, concurrently with the submittal of recommendations by the Secretary of Defense to the 1995 Base Closure and Realignment Commission. Based on information provided by the Army to this

department and this department's review and findings, environmental permits have been issued to the Army that were necessary to conduct chemical defense training mission activities at Fort Leonard Wood. The DEIS make it very clear that modification of the present air permit will be necessary to undertake any of the alternative obscurant training actions addressed in the DEIS. 1

This department's review has revealed a number of important concerns regarding the proposed action. Our attached comments, both general and specific, are offered as suggestions for the Final Environmental Impact Statement (FEIS).

We appreciate the opportunity to review and comment on this important matter. Please contact me if you have any questions about our comments.

Very truly yours,

DEPARTMENT OF NATURAL RESOURCES

David A. Shorr
Director

DAS/tl

Attachment

CF:
DE (COL Morris)
DP (Roy Reed)
EP (Narry Beyer)
Ft.L.Wood (Emily Brown)

Missouri Department of Natural Resources
Comments on the Draft Environmental Impact Statement
Proposed Relocation of U.S. Army Chemical School and
U.S. Army Military Police School to Fort Leonard Wood, Missouri

General Comments

Geologic/Hydrogeologic Conditions

Geologic conditions and past events at Fort Leonard Wood (FLW) illustrate a need for careful planning of the proposed activities, taking into consideration that many areas of the FLW area have a demonstrated record of sinkhole collapse and sediment runoff in certain training areas. The FLW staff have responded properly when natural catastrophic events have occurred in the past and the impacts were appropriately mitigated. However, the FLW staff now are in the position of minimizing these problems before they occur. Geologists, engineers, and contractors working with the base planning agencies must be aware of these matters. While it is recognized that many factors must be taken into consideration in siting the proposed new facilities, the following comments focus on geohydrologic aspects of the proposed actions in an effort to take maximum advantage of geologic conditions.

Because some areas of FLW are much more geologically sensitive than others, it is important that site-specific geologic conditions be thoroughly evaluated for each location where activities may impact the environment. Areas with a minimal number of karst features, such as caves, sinkholes, and losing streams, would be geologically preferable to areas which exhibit an abundance of karst features. Two of the geologic formations which directly underlie the installation, the Roubidoux Formation and the Gasconade Dolomite, tend to contain well-developed karst features. The Jefferson City Dolomite, which directly underlies the remainder of the installation, tends to be less permeable and have less well-developed karst features than either the Roubidoux Formation or the Gasconade Dolomite. Consequently, the strengths and weaknesses of subsurface geology should be taken into consideration in the siting and construction of facilities. 2

Runoff from construction areas, training and maneuver areas, and vehicle maintenance areas is an important environmental issue. Soil disturbance leads to higher erosion rates and, subsequently, to increased sediment loading of surface water. Additionally, runoff may be contaminated by the release of oils, grease, or fluids from vehicles. Planned training activities will include the decontamination of vehicles and equipment, therefore, the potential for runoff of chemical simulants must also be considered. An indirect impact on surface water quality could result if runoff from these activities is not contained; consequently, control of surface water runoff is planned. According to the DEIS, most of the runoff generated from these activities will enter surface waters, although a "small portion" may enter the groundwater system through sinkholes. The text further states that, because the volume of runoff entering groundwater will be "minuscule" compared to the total volume of recharge, the impact will be indirect and insignificant. It should be noted that, due to the prevalence of highly permeable surficial materials, losing streams, and sinkholes over much of FLW, there is a high degree of 3

subsurface migration of surface water should be expected.

Possible effects of seismic activity in the vicinity of FLW are described in the DEIS. While the potential for damage to facilities as a direct result of earthquake activity may be minimal, instability of facilities could occur through gradual or catastrophic sinkhole collapse. Therefore, the potential for subsurface subsidence should be considered when siting facilities. Appropriate preconstruction exploration should be conducted in geologic areas where subsurface subsidence is a potential. 3 con

Accidental spills which may occur at FLW are to be contained and cleaned up in accordance with the Installation Spill Contingency Plan. The DEIS concludes that, because the Installation Spill Contingency Plan is adequate, no direct adverse environmental impact is anticipated as a result of accidental spills. It should be noted that, depending upon the location of the accidental spill, and the nature of the material released, containment may be difficult to achieve. Rapid subsurface migration of released material is possible, due to the highly permeable soils, losing streams, and sinkholes prevalent throughout portions of the installation. Careful siting of facilities and activities on the geologically most favorable areas of FLW would help minimize potential adverse impacts of accidental spills. It is recommended that special spill contaminant controls in the geologically sensitive areas should be incorporated in the Spill Contingency Plan. 4

Evidence indicates that little fog oil would be deposited as a result of obscurant training at FLW and that any deposits would be extremely low in quantity and would be degraded rapidly through normal biological processes. Quarterly sampling is planned to assure that there are no impacts on water resources. A comprehensive understanding of the surface water and groundwater hydrology of the FLW area is recommended in order to determine potential contaminant migration pathways and, thus, the most appropriate sampling locations. 5

Air Quality

Overall, the DEIS does not provide information about all the potential ambient air impacts from the proposed actions at FLW because these sources also have not been evaluated in the permitting review process. These actions include the increase in fog oil usage for all the alternatives, the proposed movement of some of the smoke training locations, the emission increases proposed for the use smoke pots, CS irritant gas, FFE deterrent training, live-fire weapons, military vehicle drive training, exterior use of biological simulants, exterior use of chemical simulants, and autoclaving of personal NBC equipment. All sources of emissions were not adequately accounted for in the DEIS. Specifically, volatile organic compound (VOC) emissions from the uncombusted FFE deterrent training should be estimated and not assumed to be zero. Other needs for additional documentation are listed in the specific comments. 6

More attention needs to be given to the level of air emissions from the entire installation. Ideally, the FEIS should include an additional table containing the following information. 7

- The level of emissions for all regulated pollutants from all grandfathered equipment (equipment not subject to 10 CSR 10-6.060 because of date of construction or date activity commenced).
- The change in emissions associated with each permit issued to Fort Leonard Wood.

changes in operation.

- The total emissions from the entire installation, as-is and as presently permitted.
- The change in emissions associated with each of the implementation alternatives.

7 cont.

Once the final decisions on these aspects are made, they need to be evaluated through the permitting process.

Specific Comments

Section 1.4.6.5, Use of Graphite Powder, Page 1-10

Air Permit 0695-010 specifically prohibits the introduction of graphite to fog oil to enhance obscurant effectiveness. Therefore, a permit modification or a new permit would be needed to perform obscurant training with graphite, as stated in the DEIS. 8

Section 3.3.3.7, Obscurant Procedures, Page 3-30

Under all the proposed alternatives, FLW would need to apply for a permit to increase the amount of fog oil used for obscurant training. 9

Section 3.3.3.7.3, Obscurant, Employment Proficiency Test (Mobile Operations), Page 3-33

The use of other forms of obscurants (including smoke grenades and smoke pots) to fill holes in the obscurant cloud was not modeled in the PSD permit process. This omission could cause potential exceedances of the PSD increment and nullify the current modeling/permit. This comment also applies to Section 3.3.3.7.4. 10

Section 4.2.1, Topographic Setting, Pages 4-2 to 4-3

The discussion concerning the "Low Plains" and "High Plains" areas as they relate to the FLW installation is unclear. 11

Section 4.2.1., Topographic Setting, Paragraph 1, Page 4-2

According to the text, "Local relief is largely between 115 to 164 feet throughout the Low Plains with elevations ranging between 770 to 1,164 feet above MSL." However, the text goes on to state that "Elevations are generally higher in the north-central and south-central portions of the reservation where elevations range from 1,089 to 1,266 feet." Please explain this apparent discrepancy. Judging from a topographic map of the installation, it appears as though the highest elevation at FLW is approximately 1,175 feet above MSL. 12

Section 4.2.1, Topographic Setting, Page 4-3, Paragraph 1

According to this paragraph, "Steep, deeply dissected surfaces are prominent adjacent to alluvial stream valleys in the northeast and western portions of the installation. Elevations range between 984 and 1263 feet above MSL . . . ." See Comment 12. 13

Section 4.3.1 ,Air Quality, Emission Sources, Page 4-10

An emission point list with emissions of all pollutants should be included to evaluate all the potential sources of emissions that are listed in Table 4.3 14

Section 4.5.1.1, Big Piney River, Page 4-18, Paragraph 3

According to this paragraph, the main tributaries of the Big Piney River which drain FLW are Dry Creek, McCourtney Hollow and Falls Hollow. It should be noted that there are several 15

significant unnamed tributaries to the Big Piney River which also drain portions of FLW.

Section 4.5.1.2, Roubidoux Creek, Paragraph 1, Page 4-19
Ballard Hollow, Caby Hollow, Hurd Hollow, Musgrave Hollow, Smith Branch, and Turnbull Hollow all drain into Roubidoux Creek. It should be noted that McCann Hollow, Bailey Hollow, Pond Hollow, and Wolf Hollow also drain into Roubidoux Creek. 16

Section 4.5.1.2, Roubidoux Creek, Paragraph 1, Page 4-19
Roubidoux Creek is classified as a losing stream, which is defined as a stream that distributes 30 percent or more of its flow into an aquifer through natural processes, such as infiltration through permeable subsoil or cavernous bedrock. It should be noted that many tributaries to both Roubidoux Creek and the Big Piney River are also known or suspected losing streams. 17

Section 4.5.1.3, Dry Creek, Paragraph 1, Page 4-19 and Section 4.7.1.2.2, Wastewater Treatment, Page 4-29, Paragraph 2
According to the text, Dry Creek is a losing stream during the summer months. It should be noted that Dry Creek has been classified as a losing stream, and is considered to be losing year-round. In general, the only flow in Dry Creek is that contributed by the wastewater treatment plant. 18

Section 4.5.1.5, Other Streams, Page 4-20
According to this paragraph, the remaining streams located on FLW (those other than the Big Piney River, Roubidoux Creek, and Dry Creek) are intermittent. It should be noted that Musgrave Hollow and the lower portion of Ballard Hollow are both suspected gaining streams. 19

Section 4.5.2, Floodplains, Page 4-21
Areas within the 100-year regulatory floodplain have been designated on all of the major waterways flowing through FLW, including land along the Big Piney River, Roubidoux Creek, Smith Branch, Dry Creek, Ballard Hollow, Hurd Hollow, Musgrave Hollow and Turnbull Hollow. According to Figure 4.4, it also includes land along Caby Hollow. 20

Section 4.5.3, Hydrogeology/Groundwater, Page 4-22, Paragraph 2
Eleven dye traces are reported to have been conducted on FLW. Five of these dye traces were reported in the north-central portion of the reservation. Dye from four of these traces was detected at Shanghai Spring, northeast of FLW. Dye injection locations for the four successful traces reportedly included Dry Creek, near the FLW wastewater treatment plant. In actuality, 12 dye injections have occurred on FLW. Six of these injections were conducted in the north-central portion of the reservation, and dye from five of the injections was detected at Shanghai Spring. Dye injection locations for the five successful traces included two locations in Dry Creek, near the wastewater treatment plant. 21

Section 4.5.3, Hydrogeology/Groundwater, Page 4-22, Paragraph 3
The most productive aquifer underlying FLW is reportedly the Potosi Dolomite Formation. The Potosi Dolomite is actually one of several formations comprising the Ozark Aquifer. 22

Section 4.6.1, Geologic Formations, Page 4-23, Paragraph 4
The only active quarry on the installation is located in an area of exposed Gasconade Dolomite. This report concludes that the formation is, consequently, the primary source of aggregate for 23

local construction at FLW. This statement should be verified. It has been reported that very little aggregate used at FLW is obtained from the installation quarry. | 23 cont.

Section 4.6.1.2, Karst Features, Page 4-24, Paragraph 2
According to the text, the point at which Roubidoux Creek loses its flow under low flow conditions coincides with the Hurd Hollow Fault, and the location of flow loss under higher flow conditions coincides with the projection of the northeast-southwest alignment of sinkholes. The location of Hurd Hollow Fault as well as the northeast-southwest aligned sinkholes should be provided (Figure 4.5). | 24

Section 4.6.2, Seismicity, Paragraph 1, Page 4-24
Faults identified in the FLW area include the Countyline Fault and the Hurd Hollow Fault. A map depicting the locations of these faults should be provided. | 25

Section 4.7.2.2, Infrastructure, Landfills, Page 4-31
The twenty-seven (27) acre Demolition Landfill is the only landfill mentioned when actually, there are several solid waste and potentially one or more hazardous waste landfills located within FLW's boundaries. These former dump sites are included for investigation and cleanup during the Installation Restoration Program (IRP) for Fort Leonard Wood. Also, Table 4.2. "Existing Land Use", located on page 4-4 lists on-site landfills as totaling 227 acres as compared to 27 listed above, and on Page 4-37, 4th paragraph, the statement made that FLW contains nineteen (19) closed and two open landfills. | 26

Section 4.8.1, Hazardous Waste Management, Second Paragraph, Page 4-36.
This paragraph should clearly state that FLW has attained interim status under RCRA, as a Treatment, Storage, Disposal (TSD) facility and as required by Federal/State regulation and will conduct environmental remedial clean up as required. | 27

Section 4.8.1, Hazardous Waste Management, Page 4-37, Paragraph 5
A total of 52 solid waste management units (SWMUs) have been identified at FLW. According to this report, these SWMUs included two open landfills. It should be noted that there are currently no open landfills at FLW. | 28

Section 4.8.1, Hazardous Waste Management, Page 4-37, Paragraph 5
Further investigation was recommended at several of the 52 identified SWMUs. A list of the sites recommended for further investigation is provided. It should be noted that several SWMUs currently under further investigation are not included in the list. For example, while the list includes only one sanitary landfill, several landfills are currently undergoing investigation. In addition, the former pesticide building, which is also being investigated, is likewise, not listed. | 29

Section 4.8.3, Petroleum, Oil and Lubricants (POL), Page 4-38,
The presence of any leaking underground storage tanks (LUSTs) should be addressed. | 30

Section 4.8.7, Radon, Page 4-39
This paragraph should include references to all study reports and documentation that support the conclusion that remedial action for RADON contamination is not required. | 31

Section 4.10, Permits and Regulatory Authorizations, Figure 4.7, Page 4-45

An identifier should be included with all the permitted air sources shown in this figure. | 32

Section 4.10.3.1, Hazardous Waste Management, First paragraph, Page 4-47
This paragraph should state that FLW has interim status as a TSD facility as well as being a Large Quantity Generator. | 33

Section 4.10.3.1, Hazardous Waste Management, Second paragraph, Second sentence, Page 4-47
This sentence says that there are "62" SWMUS undergoing remedial investigation, however, page 4-37, 4th paragraph, states that there are a total of 52 SWMUS. The FEIS should be consistent and accurate as to the total number of SWMU's present within FLW boundaries. | 34

Section 5.2.2.3, Environmental Consequences, Air Quality and Climate, Page 5-17
The General Conformity Rule does not apply to this modification (as stated in the DEIS). | 35

Section 5.2.2.3.1.1, RCP Alternative, Direct Impacts, Page 5-18
The VOC emissions from the uncombusted FFE Deterrent training should be estimated as the total unburned fuel and not as zero as stated in the DEIS. Also, the emission factors used in Table 5.2 should be documented beyond the siting of the USAF reference. The inclusion of this emission factor report would be helpful. This comment applies to Section 5.2.2.3.1.2 as well. | 36

Section 5.2.2.3.2, Air Emissions From the Firing of Ammunition, Page 5-21
The emissions from this source are referenced in Table 5.3. Table 5.3 does not include these emissions. Another table should be included to represent the emissions from this source for all alternatives. | 37

Section 5.2.2.3.6.1, Air Emissions from CTDF, RCP Alternative, Page 5-29
Example calculations should be included to verify ambient impacts presented in Table 5.7. Example calculations should, also, be included for all the emission Tables in Section 5.2.2.3 including appropriate emission factors and throughput/use. | 38

Section 5.2.2.3.7, Air Emissions from Fog Oil Training, Page 5-30
This section does not accurately reflect the entire PSD modeling process. A copy of the modeling report and the subsequent review should be included in the FEIS along with a more complete explanation of the modeling (including example input and output files from the NAAQS and increment modeling). The DEIS states, "Analysis of 84,500 gallons per year (OPTM) encompasses the lower level of environmental impact which would be caused by the currently permitted level of 65,000 gallons per year." The meaning of this statement is unclear and clarification should be provided. The DEIS never addresses the analysis of the 65,000 gallons per year limit or the 3,700 pounds per day limit and, also, does not address the higher proposed limits. Also, the comment for section 3.3.3.7 is applicable. | 39 | 40

The background concentration for this particular modeling project was 39 µg/m^3 for the 24-hour averaging period, not 40 µg/m^3 as stated in the EIS. | 41

If FLW wants to obtain an additional increment from existing baseline sources, this increment expansion must be modeled with actual emissions from the existing source. Then, the predicted concentrations will be added to the individual receptors to increase the increment at those | 42

receptors.

The DEIS states, "Alternative locations which will be used for fog oil obscurant training are illustrated in Figure 5.4. Alternative locations are not a factor in the NAAQS analysis, but do enter into other resource analysis." If the location of any smoke training differs from the dispersion modeling, FLW will have to apply for a permit modification and demonstrate compliance with the NAAQS and the PSD increment. An alternative location could significantly influence the NAAQS or PSD increment analysis and potentially cause exceedances. 43

It is recommended that a copy of air permit 0695-010 should be included in the FEIS to illustrate the specific conditions to be met by FLW to operate the fog oil obscurant training. Also, a copy of the ambient air monitoring plan and soil and vegetation sampling plan (both are presently unapproved) should be included. However, if a permit modification is sought, these plans must be modified as well to reflect the conditions of the permit modification (location of sights, sampling duration, and frequency). 44 45

Section 5.2.2.3.10, Emission of Odors from Fog Oil, Page 5-37
A detectable concentration limit should be determined and a more thorough analysis should be undertaken at that time. 46

Sections 5.2.2.5.B.1.1 and 5.2.2.B.1.2, Soil Erosion on Training and Maneuver Areas, Pages 5-53 and 5-54
According to these sections, it is highly unlikely that groundwater quality at the major springs that serve as the main groundwater discharge points will be measurably impacted by soil erosion resulting from disturbance by wheeled and track vehicles during maneuver operations and weapons training on live-fire weapons. It should be noted that Shanghai Spring has exhibited elevated turbidity levels on several occasions, presumedly due to increased erosion and/or failure of sediment retention basins on FLW. 47

Section 5.2.2.5.B.2.1, Release of Unburned Fuels from FFE Deterrent Training, RCP Alternative, Page 5-54, last paragraph
According to the text, Range 27A is located in an area that could have flow to either Miller Spring or to discharges that ultimately lead to Roubidoux Creek. It should be noted that other discharge locations are also possible. 48

Section 5.2.2.10.1, Air Quality Management Permits, Page 5-74
The sum of the impacts from all the proposed modifications listed in this section should be used to evaluate the need for a PSD or other permit review. 49

Section 5.2.3.3, Air Quality and Climate, Page 5-151
If any location of smoke training activities is modified from the modeled locations, a permit modification will need to submitted to MDNR. 50

Section 5.2.4.3, Air Quality and Climate, Page 5-175
Same comment as Section 5.2.3.3. 51

Section 5.3.2.6.4, Geology and Soils, General Instruction Facility (Combined Headquarters and Instruction), Page 5-212 52

According to this section, under the Preferred Alternative, project sites P-7, P-8, P-16, P-19, and P-20 share the same site as P-2 and, thus, also have a significant adverse impact to soil. However, according to Figure 3.3, these projects sites do not share the same location. Please clarify.

Section 5.3.2.6.5, Geology and Soils, Applied Instruction Facility (Combined Headquarters and Instruction), Page 5-212
According to the text, the Chemical OSUT and the Military Police OSUT are project sites P-9 and P-21, respectively, under the Army's Preferred Alternative. However, according to Figure 3.3, the Chemical OSUT is designated as Project Site P-3, and the Military Police OSUT is designated as Project Site P-4. Please clarify. 53

Section 5.5.1.2, 5.5.2.2, and 5.5.3.2, Cumulative Impacts and Mitigation, Significant Adverse Impacts, Pages 5-330, 5-343 and 5-345,346 54
See comment for section 5.2.2.3.7.

Section 5.5.1.3, Adverse Impacts and Other Issues, Page 5-334 55
See comment 5.2.2.10.1

Volume III, Appendix H, Table H.1, Fort Leonard Wood Existing Environmental Monitoring
The monitoring plans for permit 0695-010 have not been approved. Therefore, the locations, frequency, and other conditions have not been determined and should not be reported here. Also, the Soil and Vegetation Sampling should be included in Table H.1. 56

S-MDNR.01	Comment noted. Agree. Army will request renewal or modification of their existing air quality permit for the additional quantity of fog oil.
S-MDNR.02	The facility siting process considered the location of known karst features, and these features were avoided to the extent possible. Construction and training environmental controls, as discussed in subsection 5.1.4, limit the potential for impacts to subsurface features. The analysis of geological features contained in subsections 5.3.2.6, 5.3.3.6, and 5.3.4.6 was developed based on the understanding that specific subsurface conditions will be identified as part of the design process, and the results of these investigations will be considered in the design and construction of all facilities.
S-MDNR.03 Part 1	Subsections 5.3.2.5, 5.3.3.5, and 5.3.4.5, which deal with surface water and groundwater at proposed construction sites, have been modified to more clearly state that erosion control measures will be utilized at the proposed construction sites in accordance with Federal and State regulations. An incorrect reference to detailed Best Management Practices for control of sediment from construction sites has been corrected.
S-MDNR.03 Part 2	Subsection 5.3.2.5, 5.3.3.5, and 5.3.4.5, which deal with surface water and groundwater have been modified to provide additional information on decontamination of vehicles.
S-MDNR.03 Part 3	Comment noted.
S-MDNR.03 Part 4	Preconstruction explorations will be conducted at all final construction sites as part of the facility design process. Additional text has been inserted in subsection 5.3.2.6 to clarify this issue.
S-MDNR.04	As discussed in response to State of Missouri, Department of Natural Resources comment number 3 (S-MDNR.3) geologically sensitive areas have been avoided to the extent possible. Construction features and training measures have also been implemented to further reduce the impact of proposed actions. Where required, special spill containment features have been included in the construction plans and administrative plans have or will be developed by FLW to address these additional features. The use of these facilities and plans have been considered in the development of subsections 5.3.2.5 (A and B), 5.3.2.6, 5.3.3.5 (A and B), 5.3.3.6, 5.3.4.5 (A and B), and 5.3.4.6.
S-MDNR.05	Subsection 5.2.2.5.A.1 has been modified to include a commitment by FLW to perform surface water monitoring.

1	S-MDNR.06	Additional dispersion modeling has been performed for all three fog oil training alternatives. Because the main concern is particulate matter (i.e. based on quantity of emissions and modeling results), additional calculations have been performed for smoke pots and unpaved road emissions and included in the fog oil dispersion modeling. The results have been summarized in subsection 5.2.2.3.7. In addition, the Air Quality Technical Reference Document (which is available at each of the information repositories identified in Section I) includes the following items: • fog oil permit and permit review; • fog oil dispersion modeling report; • example fog oil dispersion modeling outputs; and • CDTF air permit. Other air emission sources identified in subsection 5.2.2.3 have been evaluated for potential impacts to ambient air. Because many are de minimis emissions, the impact to ambient air is anticipated to be negligible. It is also stated that both particulate and ozone monitors (for VOCs) are required. Dispersion modeling for particulate has been performed as part of the modified cumulative analysis for air quality. Air sources included in the model, as well as background concentrations, were coordinated with both MDNR and USEPA. Subsection 5.5 has been modified to include the additional analysis and results of the cumulative air quality analysis. The emissions from FFE training have been conservatively estimated and added to Table 5.2 in subsection 5.2.2.3.1. FFE training was also included in the cumulative modeling.
2	S-MDNR.07	A summary table of the 99 sources identified in the EIQ has been incorporated into subsection 5.5.
3	S-MDNR.08	Comment noted. Agree. U.S. Army will not use graphite for obscurant training without a permit from MDNR.
4	S-MDNR.09	See response to Environmental Protection Agency comment number 4(F-USEPA.04) and Missouri Coalition for the Environment comment number 36 (G-MCE.36).
5	S-MDNR.10	See response to the Missouri Coalition for the Environment, comment number 18 (G-MCE.18) and response to State of Missouri, Department of Natural Resources comment number 6 (S-MDNR.06).
6	S-MDNR.11	Subsection 4.2.1 has been modified to clarify this issue.
7	S-MDNR.12	Subsection 4.2.1 has been modified and clarified. See response to State of Missouri, Department of Natural Resources comment 11 (S-MDNR.11).
8	S-MDNR.13	Subsection 4.2.1 has been modified and clarified. See response to State of Missouri, Department of Natural Resources comment 11 (S-MDNR.11).

1	S-MDNR.14	There are 99 point sources that comprise the emissions in this table. MDNR requested a summary of emissions by source category (i.e. boilers, fuel storage, etc.). This data has been incorporated into Table 4.3.
2	S-MDNR.15	Subsection 4.5.1.1 has been modified to clarify this issue.
3	S-MDNR.16	Subsection 4.5.1.2 has been modified to clarify this issue.
4	S-MDNR.17	See response to State of Missouri, Department of Natural Resources comment 16 (S-MDNR.16).
5	S-MDNR.18	Subsections 4.5.1.3 and 4.7.1.2.2 have been modified to note that Dry Creek has been classified as a losing stream, and is considered to be losing year-round.
6	S-MDNR.19	Subsection 4.5.1.5 has been modified to clarify this issue.
7	S-MDNR.20	Subsection 4.5.2 has been modified to clarify this issue.
8	S-MDNR.21	Subsection 4.5.3 has been modified to note that 12 dye injections have occurred. Wording changes include twelve rather than eleven total dye traces and six rather than five dye traces in the north-central portion of the FLW reservation. A figure showing the results of the dye traces has been included in subsection 4.5.1.6.
9	S-MDNR.22	Subsection 4.5.3 has been modified to clarify that the Potosi Dolomite is actually one of several formations comprising the Ozark Aquifer.
10	S-MDNR.23	Subsection 4.6.1.1 has been modified to clarify this issue.
11	S-MDNR.24	Figure 4.5 has been updated to include the location of the Hurd Hollow Fault as well as the northeast-southwest aligned sinkholes along Roubidoux Creek.
12	S-MDNR.25	The locations of the County Line fault and the Hurd Hollow fault have been added to Figure 4.5.
13	S-MDNR.26	Subsection 4.7.2.2 (page 4-31) and Table 4.2 have been clarified, and subsection 4.8.1 has been changed (see response to MDNR.29) to note that there are no landfills currently open on FLW.
14	S-MDNR.27	Subsection 4.8.1 has been modified to clarify this issue.
15	S-MDNR.28	See response to comment S-MDNR.26 for clarification that no landfills are currently open on FLW. See response to comment S-MDNR.29 for revisions to subsection 4.8.1 to also help reduce the confusion.
16	S-MDNR.29	Subsection 4.8.1 has been modified in the 5th paragraph on page 4-37 to clarify and complete the listing of SWMU's requiring further investigation.
17	S-MDNR.30	Subsection 4.8.3 has been modified to clarify this issue.
18	S-MDNR.31	Subsection 4.8.7 has been modified to clarify this issue.
19	S-MDNR.32	Figure 4.7 has been modified to include identifiers for each source.
20	S-MDNR.33	Subsection 4.10.3.1, has been modified to clarify this issue.
21	S-MDNR.34	The number of SWMUs has been corrected (52), and as discussed in response to State of Missouri, Department of Natural Resources comment number 29 (S-MDNR.29), subsection 4.8.1 has been modified to include a complete listing of SWMUs requiring further investigation.
22	S-MDNR.35	Comment noted.

1	S-MDNR.36	The emissions have been estimated and added to Table 5.2 in subsection 5.2.2.3.1. Emission calculations (including applicable sections from the emission factor report) have been included as part of the Air Quality Technical Reference Document. Emission factors are included in Table 5.2.
2	S-MDNR.37	Emissions are identified in subsection 5.2.2.3.2. of the FEIS. The text in subsection 5.2.2.3.2.1 has been modified to state that Table 5.2 documents the de minimis air permitting levels.
3	S-MDNR.38	Ambient air modeling was performed by MDNR. Data was primarily taken directly from the air permit, but some conversions were performed to compare the impact to the standard. Conversions used to develop Table 5.7 are included in the Air Quality Technical Reference Document. All calculations used to develop the analysis included in subsection 5.2.2.3 have been included as an Air Quality Technical Reference Document. These calculations include emission factors if applicable.
4	S-MDNR.39	See response to State of Missouri, Department of Natural Resources comment number 6 (S-MDNR.6).
5	S-MDNR.40	Dispersion modeling was performed for 65,000 gallons per year for the current air permit, and this information has been included in the Air Quality Technical Reference Document. Additional dispersion modeling for all three fog oil alternatives has been performed, and the results have been incorporated into subsection 5.2.2.3.7.
6	S-MDNR.41	Subsection 5.2.2.3.7 has been corrected to indicate these values.
7	S-MDNR.42	Subsection 5.2.2.3.7.2 has been modified to clarify this issue.
8	S-MDNR.43	Subsection 5.2.2.3.7 has been modified to clarify this issue.
9	S-MDNR.44	A copy of the fog oil air permit has been included in Volume III, Appendix J. In addition, a summary of the fog oil air permit has been included in subsection 5.2.2.3.7.
10	S-MDNR.45	See response to Environmental Protection Agency comment number 22 (F-USEPA.22).
11	S-MDNR.46	This comment has been coordinated with MDNR. Additional text has been added to subsection 5.2.2.3.10 of the FEIS to clarify this point.
12	S-MDNR.47	Subsections 5.2.2.5.B.1.1 and 5.2.2.5.B.1.2 have been modified to clarify this issue.
13	S-MDNR.48	Subsection 5.2.2.5.B.2.1 has been modified to clarify this issue.
14	S-MDNR.49	Cumulative dispersion modeling has been performed and the analysis has been incorporated into subsection 5.5.
15	S-MDNR.50	Further explanation of this issue has been added in subsection 5.2.3.3.
16	S-MDNR.51	Further explanation of this issue has been added in subsection 5.2.4.3.
17	S-MDNR.52	Subsection 5.3.2.6.4 has been corrected.
18	S-MDNR.53	Subsection 5.3.2.6.5 has been corrected.

S-MDNR.54	See response to State of Missouri, Department of Natural Resources comment number 40 (S-MDNR.40).
S-MDNR.55	See response to State of Missouri, Department of Natural Resources comment number 49 (S-MDNR.49).
S-MDNR.56	Based on MDNR's recommendation, the locations, frequency, and other conditions from permit 0695-010 have been removed from Appendix H. The Army has developed a Monitoring Plan Summary which has been included in Vol. III, Appendix K.

State of Missouri, Office of Administration

Mel Carnahan
Governor

Richard A. Hanson
Commissioner

State of Missouri
OFFICE OF ADMINISTRATION
Post Office Box 809
Jefferson City
65102

Stan Perovich
Director
Division of General Services

October 29, 1996

U.S. Army Corps of Engineers
Kansas City District, 601 E. 12th Street
Kansas City, MO 64106-2896

Attn: Mr. Alan Gehrt (MRKEP-PR)

Dear Mr. Gehrt:

Subject: 96100030 - DEIS Relocation of U.S. Army Chemical School and U.S. Army Military Police School to Fort Leonard Wood, Missouri

The Missouri Federal Assistance Clearinghouse, in cooperation with state and local agencies interested or possibly affected, has completed the review on the above project application.

None of the agencies involved in the review had comments or recommendations to offer at this time. This concludes the Clearinghouse's review.

A copy of this letter is to be attached to the application as evidence of compliance with the State Clearinghouse requirements.

Sincerely,

Lois Pohl, Coordinator
Missouri Clearinghouse

LP:cm

	Comment noted.

City of Waynesville

CITY OF WAYNESVILLE

PRESERVING THE PAST-PLANNING FOR THE FUTURE

BILL L. RANSDALL, Mayor
JOHN T. TINSLEY, City Administrator
BARBARA A. STINSON, City Clerk

November 13, 1996

Mr. Alan Gehrt
Attn: MRKPD-R
Kansas City District
Corps of Engineers
601 E, 12th Street
Kansas City, MO 64106

Dear Mr. Gehrt:

I have been involved with the Chemical and M.P. School moves since their conception, as well as having attended all the hearings and briefings. I feel the Army is very capable of preserving the environment and have confidence that the training involved with the moves will not have an adverse effect on the quality of life.

As Mayor of Waynesville, neither myself or City Hall has received any complaints or concerns involving the move and its effect.

Therefore, I am wholeheartedly endorsing the move of the Chemical and M.P. Schools from Ft. McClellan to Ft. Leonard Wood.

Sincerely,

Bill L. Ransdall
Mayor

	Comment noted.

Pulaski County Commission

Pulaski County Commission

Pulaski County Courthouse
301 E. Historic 66
Waynesville, MO 65583

Ralph Peterson, Presiding Commissioner
Art Helms, Western Commissioner
Bland Smith, Eastern Commissioner

Telephone 573 774 6609
Fax 573 774 5601

November 18, 1996

Attn: Alan Gehrt (MRKEP-PR)
U.S. Army Corps of Engineers
Kansas City District
601 E. 12th St.
Kansas City, MO 64106-2898

Dear Mr. Gehrt;

The Pulaski County Commissioners would like to go on record as being in full support of the move of the Army Chemical and Army Military Police Schools to Fort Leonard Wood MO. We serve as the elected governing body of all the unincorporated area of Pulaski County. In other words we are the mayor and city council of all Pulaski County that resides outside of an incorporated city limits. We have been involved from the beginning of this move and are familiar with all aspects of the move. We fully believe that no part of the proposed training associated with the new schools will cause any alarm for any of our residents. We have full confidence in Army personnel to correct any situation that may arise that could in any way affect people outside of Fort Leonard Wood. We believe that only good can come from this move and we welcome all who will move to Pulaski County and pledge our support and help in making their stay comfortable. We have great plans for our county and look forward to seeing our population grow as the mission of Fort Leonard Wood continues to expand.

If we can be of further assistance to making this move smooth, please do not hesitate to ask. We will be available and do all that we can.

Sincerely,

Ralph Peterson Art Helms Bland Smith

	Comment noted.

Pulaski County Sewer District #1

PULASKI COUNTY SEWER DISTRICT # 1
1106 Old Route 66
Sunrise Plaza, Suite 2C
Saint Robert, Missouri 65583-4601

Ralph Peterson, Presiding Commissioner, Pulaski County
Charles Bassett, Chairman; Vacant, Vice Chairman; David L. Teufel, Secretary Treasurer; Delbert Yocum, Asst. Secretary Treasurer

Lillie M. Teufel, Office Manager
Justin Fritchey, Plant Manager; Dale Martin, Asst. Plant Manager
Telephone 314-336-5880

November 14, 1996

Commanding General
The Engineer School & Fort Leonard Wood
Fort Leonard Wood, Missouri 65473

Dear Sir:

The board and I would like to take this opportunity to express our wholehearted and complete support for you in the move of the Chemical and Military Police Schools from Fort McClellan.

Many communities and organizations within this county have come together in this matter to support you. We want this area to grow with Fort Leonard Wood and are doing everything within our power to aid the move. The sewer district has the infrastructure and the will to support the move. We are currently making plans for the next five years to ensure that our local water supplies remain as pure as we can possibly make them. We have been in business in Pulaski County since 1990 and have built two sewer projects in the Highway 28 area. We currently operate a triple cell lagoon in support of these two areas. In addition we have been working with housing developments and motels outside our current sewage areas to improve their treatment plants so as to assure that quality water leaves these plants on its way to our rivers and streams.

We work closely with the Missouri Department of Natural Resources to see that the environment is protected and our water supplies remain wholesome and unpolluted. We look forward to working closely with Fort Leonard Wood in an effort to supply needed sewer service and thereby ensure a healthy and friendly environment for this area.

Sincerely,

Charles Bassett
Chairman

	Comment noted.

Fort Leonard Wood Regional
Commerce and Growth Association

PUBLIC HEARING AND OPEN HOUSE
Fort Leonard Wood, Base Realignment and Closure Actions - 1995
COMMENT SHEET

If you are interested in providing comments concerning the Draft Environmental Impact Statement for the realignment of the US Army Military Police School and US Army Chemical School to Fort Leonard Wood, please provide your written comments below and send to the address noted, or leave this form in the designated location at the November 14, 1996 Public Hearing and Open House.

I AM VERY MUCH IN FAVOR OF THE MOVE OF THE M.P. AND CHEMICAL SCHOOL TO FORT LEONARD WOOD, MO. I FEEL CONFIDENT THE U.S. ARMY HAS DONE A THOROUGH JOB OF EVALUATING THE ENVIRONMENTAL IMPACT THIS MOVE WILL HAVE BOTH ON AND OFF POST. I BELIEVE THE MOVE WILL PROVE TO BE COST EFFECTIVE FOR THE MILITARY. IT WILL BE SAFE FOR THE MILITARY AND NEARBY CITIZENRY AND WILL HAVE SUBSTANTIAL POSITIVE ECONOMIC IMPACT ON OUR AREA.

(additional space on the back) >>>>

SEND COMMENTS TO:

Mr. Alan Gehrt

US Army Corps of Engineer
Kansas City District
601 E. 12th Street
Kansas City, MO. 64106-2896

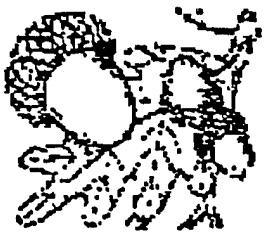
YOUR NAME: D. V. Dayton

Organization: FT. LEONARD WOOD REGIONAL COMMERCE AND GROWTH ASSOC.

Address: P.O. BOX K
WAYNESVILLE, MO 65583

	Comment noted.

Heartwood
(G-Hea)



Heartwood

Dedicated to the Health and Well Being of the
Native Forests of the Central Hardwood Region

Comments on the Draft Environmental Impact Statement for the Relocation of U.S. Army Chemical School and U.S. Army Military Police School to Fort Leonard Wood, Missouri.

by **Devin M. Scherübel**
on behalf of Heartwood, Inc.
PO Box 7653
Columbia, MO 65205
(573) 443-6832 (phone)

I. Public Participation.

The denial of Heartwood's request for a 30 day extension of time has severely limited our ability to fully evaluate the DEIS and the supporting BA, ongoing mission FEIS, and other related documents. We feel this limitation does not meet the requirement that "NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. The information must be of high quality. Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA."(§1500.1 (b)) Nor does the denial meet the intention of NEPA to "Encourage and facilitate public involvement in decisions which affect the quality of the human environment" "to the fullest extent possible"(§ 1500.2 (d)). Again, CEQ regulations for NEPA at §1501.8 state that "...the Council has decided that prescribed universal time limits for the entire NEPA process are too inflexible, Federal agencies are encouraged to set time limits *appropriate to individual actions*..." Indeed, several of the factors listed in this section for consideration in determining time limits are consistent with the need for a longer comment on this DEIS: 1

"(b)(1)(i) Potential for environmental harm.

(ii) Size of the proposed action.

(v) Number of persons and agencies affected.

(vii) Degree to which the action is controversial."

For these reasons, the comments below cannot be taken as a complete and exclusive set of Heartwood's concerns regarding the DEIS and the proposed BRAC activities at Ft. Leonard Wood.

We are additionally concerned that the Biological Opinion from the Fish and Wildlife Service on Threatened and Endangered species effected by the BRAC operation will not be available until approximately December 20th, precluding the use of this information in public analysis of the T&E species analysis conducted for this DEIS. The expected release date is within the comment extension period requested by Heartwood. 2

The newsletters and meetings referred to in the letter explaining the denial of a comment period extension, while helpful in answering broad questions about the purpose of EIS development and specific questions about portions of the DEIS reviewed up to that point in time, they in no way decreased the amount of material remaining to be reviewed.

The assertion that a comment period extension would cost taxpayers $3 million is both irrelevant and absurd. Full public participation is a legal requirement which the Army is not above for any reason. Furthermore, nothing in Heartwood's statements can reasonably be taken to mean that we wish to see Ft. McClellan remain open at such an expense to taxpayers for even a single day past the present.

2. Assumptions

There are many assumptions in the DEIS and supporting documents regarding the material analyzed, the analytical methods used, and the interpretation of data or models. Although the correctness of these assumptions underpins the entire DEIS, Heartwood has not been granted sufficient time to conduct the independent literature review necessary to evaluate each of these assumptions. The heavy reliance on computer models for fog oil dispersion and effects is particularly questionable. 3

In addition to the assumptions of scientific fact and process referred to above, there is one assumption based solely on belief. Heartwood maintains that this assumption is arbitrary and capricious and has contributed to a DEIS which is arbitrary and capricious. This assumption, stated at DEIS Vol. I, 3-7 line 38, states that any "loss in military skill would adversely impact operations, troop safety and national defense capabilities." This assumption is key because it is used to eliminate as "nonviable" an entire range of potential alternatives over and above the elimination of the "no–action alternative" as mandated by BRAC law. It is the belief of Heartwood and its members that our national defense capabilities are best served by developing and implementing alternatives which minimize the international tension caused by training with chemical, biological, and radio nucleotide agents, especially while a comprehensive chemical weapons ban is under consideration by the Congress, while stabilizing the domestic economy by reducing military spending and protecting the vital interests of the community and the nation in alternatives which minimize environmental impacts. 4

3. Selection of Alternatives

The DEIS fails to meet the legal requirement to "rigorously explore and objectively evaluate all reasonable alternatives". In the requirement for the inclusion of a "no–action alternative", NEPA clearly demonstrates the need to prepare alternatives to be considered in the entire range from no action to the agency's preferred action. Although BRAC law has eliminated the need to consider a no–action alternative, the DEIS fails to consider alternatives representing most of that range. The "relocate current practices" alternative includes many activities with a greater environmental impact than the Army's preferred alternative and, as such, does not warren any consideration. The so–called environmental alternative does not significantly differ from the preferred alternative in most aspects. As stated in the DEIS Vol. I, 3-5 lines 33-36 "It should be noted that in many cases, the alternatives formulation process led to the conclusion that the RCP Alternative for certain training goals was also the OPTM (Army's Proposed Action) Alternative as well as the EPTM Alternative." Every means of accomplishing the training which would significantly lower the impacts on international stability, public health, and the environment such as primary reliance on computer simulations and video training, already under development by the Army, or delaying the move of the chemical school while a treaty is under consideration, were dismissed offhand as "not viable" and thus not analyzed. Indeed, the options presented amount to little more than mere cosmetics, such as weighing the impacts of building a few more or less training buildings or the type of batteries required by hand–held radios. 5

Compounding the error of insufficient alternatives, the BA addresses only the preferred alternative. The fact that this BA found possible negative effects to all Threatened and Endangered species analyzed should be a clear indication that alternative with lesser environmental effects must be formulated. 6

Two of the three alternatives listed, and the only alternative evaluated in the BA, are illegal. The permits obtained from the Missouri Department of Natural Resources allow a maximum of 65,000 gallons of fog oil annually. The DEIS table in vol. I, page 3–30 lines 26-32 shows the Relocate Current Practices alternative at 125,000 gallons, the OPTM at 84,500 gallons and the EPTM at 49,500. 7

4. Cumulative Impacts

The DEIS does not adequately analyze cumulative effects.

The Biological Analysis for both the ongoing mission and the BRAC activities indicate that chemical contaminants may have an effect on Indiana Bats, Gray Bats, and Bald Eagles. In spite of this, the BRAC BA and DEIS conclude that there will be no cumulative effects. This conclusion is not supported by the documents and does not appear to be justified. 8

No independent analysis of cumulative effects resulting from the degradation of the National Forest in combination with BRAC activities was conducted. Heartwood believes that continuing logging and road building/reconstruction on Forest Service land has significant impacts on habitat integrity, soil erosion, and siltation and other contamination of surface and ground water resources which must be considered in combination with the effects of BRAC activities. 9

5. Indiana Bats

The issues surrounding Indiana Bats are complex and Heartwood has not had sufficient time to review all the Analysis and Ecological Risk Assessment material provided. Indiana Bats and their associated habitat are, however, of great concern to Heartwood. It would appear that the potential for BRAC activities, particularly mobile fog oil training, to degrade summer roosting habitat for Indiana Bats was not given adequate attention. The "Literature Summary and Habitat Suitability Index Model" prepared by 3D/Environmental and referenced in the BA and DEIS as well as a recently published study on Indiana Bats ("Summer Distribution of the Federally Endangered Indiana Bat *(Myotis sodalis)* in Illinois" James E. Gardner, Joyce E. Hoffmann, and James D. Garner*, **Transactions of the Illinois State Academy of Science** (1996), Volume 89 3 and 4 pp. 187–196., not reviewed in the DEIS process, indicate that Indiana Bats show loyalty to their summer roosting locations in the bark of certain trees. Because Indiana Bats have been observed foraging in or near areas proposed for BRAC actions, the possibility that such activities may interfere with summer roosts must be specifically addressed. The 10,000 meter range of effect listed in the BA for mobile fog oil training may degrade some critical roost sites' desirability, decreasing the reproductive success of maternity colonies. This possibility is not adequately addressed. The degradation of cave habitat is specifically addressed and the direct effects to summer habitat of construction are addressed, but the likelihood that direct effects to bats from chemical agents will have a significant secondary effect of eliminating suitable summer roosting sites is not addressed. Such maternity summer roosts may be critical habitat and the conclusion stated on page 2 of the BA that "no habitat designated as critical occurs in the action area" may not be valid. 10

6. The manufacture, use, and transportation of Chemical and Biological agents

Concerns regarding these activities have been submitted by Heartwood member Tom Sager. These are concerns of Heartwood, Inc. as well. To summarize, these concerns include:

- Inadequate and inaccurate assessment of the dangers posed by the presence and use of live chemical toxins.
- Failure to develop a sufficient range of alternatives, including alternatives which do not call for the use of live chemical agents.
- Lack of information regarding the manufacture, transportation, storage and disposal of nerve toxins and biological agents.
- Missing analysis of the toxicity of binary agent components.
- Insufficient details of radio isotope use and disposal.

Summary

In summary, Heartwood feels it has been excluded from meaningful participation in the EIS/NEPA process by an inappropriately short comment period. Several concerns were noted above, and more exist which time did not allow us to research and enumerate. We feel than additional time for review and comment is an essential step in NEPA compliance at this stage. After the close of a new, realistic, comment period the issues raised above and subsequently should be combined into a new or supplementary BA and DEIS.

Sincerely,

Devin M. Scherübel Nov. 25, 1996

Devin M. Scherübel
Heartwood, Inc.
PO Box 7653
Columbia, MO 65205
(573) 443-6832

1	G-Hea.01	The Army has considered the complexity of the proposed action and EIS, and has incorporated a number of special provisions in the process to facilitate agency and public review. These special provisions have included: 1) conducting an extensive open house scoping meeting including use of a video, presentation boards, and handouts designed to provide information on the proposed action; and access to key EIS team members and Army representatives to discuss and explain the action to all interested persons; 2) preparing and distributing two newsletters between the scoping meeting and the release of the Draft EIS to keep the public informed of the progress of the study; 3) conducting a series of open-house town hall meetings to more fully inform the public of BRAC actions to occur at the installation; 4) conducting eight review agency workshops to gain their assistance in the formulation of EIS alternatives and impact analysis procedures; 5) distributing all four volumes of the EIS and all primary supporting documents in multiple locations (nine for the DEIS and 11 for the FEIS), and all repositories were provided with these documents prior to the start of the 45-day comment period on the DEIS); 6) conducting two special interest group meetings to provide all concerned groups with the opportunity to ask questions regarding the EIS structure and process; 7) releasing of the DEIS (primary Volumes I and II) to each interest group and individual that provided substantive review comments (including Heartwood) 3 to 5 days prior to the initiation of the 45-day comment period; and 8) conducting of an open house meeting prior to the formal public hearing on the DEIS to allow all interested parties to review all volumes of the DEIS, primary supporting studies, and to speak with EIS team and Army representatives to clarify the structure and content of all documents. Although comments received after the close of the 45-day DEIS review period will not be formally addressed in the FEIS, they will be included as part of the administrative records for this action, and will be made available to the decision-maker for consideration. Also see response to the Missouri Coalition for the Environment comment number 46 (G-MCE.46).
2	G-Hea.02	Comments on the Biological Opinion may be submitted along with comments on the Final Environmental Impact Statement, however comments on the Biological Opinion should also be provided to the US Department of the Interior, Office of the Secretary, Office of Environmental Policy and Compliance, Denver Federal Center, Building 36, Room 1008, P.O. Box 25007 (D-108), Denver, CO 80225-0007. Comments on the BO will be forwarded and considered by decision maker as part of the record of decision.

1	G-Hea.03	Air dispersion modeling is appropriately used when empirical data does not exist, or when applying for an air permit (in advance of a proposed action) to demonstrate compliance with ambient air quality standards. The models are based on mathematical equations that predict pollutant concentrations under different meteorological conditions. The models tend to be more conservative than indicated by actual concentrations.
2	G-Hea.04	Comment noted. The Chemical Weapons Convention recognizes the importance of training personnel in self-defense and defensive procedures to be used in the event that nuclear, biological or chemical (NBC) materials are used by an enemy or terrorist organization. Volume IV includes a review of training method alternatives that were considered during the development of the EIS. Many of these alternative methods reduced or eliminated the use of fog oil, chemical simulants and agents, biological simulants and agents, and radiological isotopes. Also included in Volume VI and in subsection 3.2 is a discussion of the alternatives formulation process that resulted in the development of the RCP Alternative, OPTM (Army's Proposed Action) Alternative, and EPTM Alternative. Additionally, subsection 5.2.2.8.5 states that Army standard operating procedure for the Chemical Defense Training Facility (CDTF) specify that a maximum of 300 milliliters of each agent may be present in the CDTF while the Chemical Weapons Convention would allow the facility to hold a maximum of 1,000 milliliters combined volume. Training at the CDTF will be conducted in full compliance with the Chemical Weapons Convention.
3	G-Hea.05	Computer simulations and the use of computer equipment to augment classroom and field training have been included in the development of alternative training methods to the extent possible (to include systems under development) in order to minimize potential environmental impacts. The extensive array of alternatives considered, and the rationale for elimination of those that were not considered to be reasonable is fully documented in Volume IV of the EIS. As stated in subsection 3.2.1.1, the differences among the three training alternatives are minimal or non-existent for many of the individual training goals as summarized in Table 3.1. In many cases, there simply is not an alternative way to accomplish these elements of the training mission, or there is no gain (in terms of reduced environmental impact) in conducting training in a different manner. A review of the alternatives structure will indicate that for those training goals that have the highest potential to cause adverse environmental impacts (for example TG 7.2 Obscurant, Employment Operations Basic (Static), TG 7.3 Obscurant, Employment Proficiency Test (Mobile Operations), TG 7.4 Obscurant, Employment Proficiency Test (Field Training Exercises), and TG 8.1 Radiation Safety) the three alternatives define training approaches that are substantially different. Additional discussion of this issue is provided by the response to Heartwood comment number 12 (G-Hea.12).

1	G-Hea.05 (cont.)	As stated in the EIS, the RCP Alternative is considered to be reasonable in that training is currently being conducted in this manner at Fort McClellan, and the procedures associated with the RCP Alternative are those that are currently included in the 72 Programs of Instructions that define how the Chemical School and Military Police School conduct all training activities at this time. Implementation of the RCP Alternative would be entirely consistent with the BRAC requirement to relocate these schools to Fort Leonard Wood. Furthermore, the RCP Alternative is beneficial to the EIS analysis process since it provides a benchmark that can be used to define alternative training methods and the relative impacts of the alternatives.
2	G-Hea.06	Discussion in subsection 5.2.2.11.A. has been modified to include additional information concerning the Biological Opinion.
3	G-Hea.07	Comment noted. However the EIS clearly states in subsections 3.3.3.7.3 and 3.3.3.7.4 (and at other locations) that FLW will adhere to all permit conditions in effect at the time training occurs. As discussed in subsection 5.2.2.10.1.2, full implementation of the Army's proposed action would require the preparation of a new air permit application, and approval of a new permit by MDNR. The FEIS clarifies how the Army will mitigate the OPTM Alternative (through reduced fog oil usage) to ensure compliance with all applicable air quality regulations.
4	G-Hea.08	Subsection 5.5 has been reorganized and modified to clarify the potential for cumulative impacts. Subsection 5.5 has been modified to summarize the effects determination provided by the USFWS in the Biological Opinion which was issued by the USFWS for the Army's proposed action between the publication of the DEIS and the FEIS. Text in other T&E subsections has been modified (subsections 5.2.2.11.A, 5.2.3.11.A, 5.2.4.11.A, 5.3.2.11.A, 5.3.3.11.A and 5.3.4.11.A) to document other guidance provided in the Biological Opinion. These revisions indicate that there may be cumulative effects of direct and indirect past, present, and reasonably foreseeable future actions to T&E species in the analysis area. Cumulative effects are defined differently under the Endangered Species Act (ESA) and NEPA. As defined under ESA (50 CFR Part 402), cumulative effects include future state, local, or private actions. As there are no such reasonably foreseeable actions, both the BA and BO concluded there are no cumulative effects of the Army's Proposed Alternative.
5	G-Hea.09	Subsection 5.5 has been reorganized and modified to clarify the potential for cumulative impacts, including potential cumulative impacts from ongoing operations of Mark Twain Forest.
6	G-Hea.10	Critical habitat for the Indiana bat does not occur in the installation. The term "critical habitat" has specific meaning in this context. See Section 3 of the Endangered Species Act for additional definition of the term.

1	G-Hea.10 (cont.)	Analyses of effects to Indiana bat summer habitat focused upon loss of forested areas (acres), as described in Table 5.40. Although mobile fog oil training has the potential to affect Indiana bats (as described in the EIS, and in detail in the BA and ERA), we do not expect the training to adversely modify *summer habitat.* The USFWS concurred with this approach used to determine effects to Indiana bats and their summer and winter habitat, and found that it appropriately assessed effects to this species. The USFWS concurred with our conclusions regarding effects to Indiana bat habitat. We have modified subsections 5.2.2.11.A and 5.3.2.11 to address this issue and provide USFWS Biological Opinion (BO) recommendations.
2 3	G-Hea.11	Potential human health issues associated with training with toxic agents has been addressed in subsection 5.2.2.15.B.5. As described in the FEIS, the Army has gone to great lengths to protect the health and safety of soldiers involved in live agent training as well as the welfare of the general public and environment. The fact that no accidents have occurred at FMC, where some 25,000 soldiers have undergone live agent training over the past 10 years, further supports the conclusion that this is a highly controlled and safe training facility. The Army's safety policies and procedures which have been used at FMC for live agent training will be employed at FLW. The dangers posed by the use of live agents during training have not been underestimated in the EIS. The EIS does, however, credit existing safety policies and procedures used by the Army as being extremely effective as the history of live agent training at the CDTF at FMC will attest. Descriptions on the transport of binary agent components, mixing of binary components, storage or binary components and mixed agents, and general handling of agents can be found in subsection 5.2.2.8.5. The discussion on toxic agents in this section is considered adequate. See also the response to Heartwood comment number 13 (G-hea.13) and the response to Ozark Chapter, Sierra Club comment number 15 (G-OCSC.15). Subsection 5.2.2.15.B.5 has been modified to provide additional information concerning the toxicity of binary agent components, and VX and GB toxicity. Subsection 5.2.2.8.5 and Appendix I, Volume III of the FEIS have been modified to include more detail on the composition and handling of wastewater resulting from decontamination training at the CDTF.

1	G-Hea.12	The BRAC Commission directs the Army to move the Chemical School to FLW, and states that the Chemical Defense Training Facility (CDTF) will continue to operate at Fort McClellan until a replacement facility is available at FLW. As documented in Volume IV, Table 4.1, Item 6.3, training in the detection and decontamination of nerve agents with simulated materials was considered, but was not considered to be reasonable in that use of simulants will not meet the minimum training requirements of the Army which are provided by this unique and critically-important training facility. Volume IV documents other examples of potential training methods that may have less impact on the environment, but were not considered to be reasonable in terms of meeting mission requirements or other evaluation criteria. In all cases, the EPTM alternative was selected to represent the best environmental solution based on the range of viable alternatives identified during the extensive formulation process.
2	G-Hea.13	The Army will not be transporting or disposing of nerve toxins and biological agents as part of the proposed action. As discussed in subsection 3.3.3.6.3 and subsection 5.2.2.8.5 binary components (not toxic nerve agents) will be transported to the new CDTF at FLW, and combined to form toxic agent within the CDTF (a facility specifically designed and constructed for this type of training). The quantities of nerve agent to be prepared and stored at the CDTF will be strictly limited to those required to conduct detection and decontamination training at the CDTF, and will be below the levels authorized to be stored under the Chemical Weapons Conventions. See the response to Heartwood comment number 4 (G-Hea.04) for additional information. All toxic agents will be decontaminated in the CDTF as part of required training prior to disposal. Disposal of the decontaminated waste by-products of the CDTF training will be accomplished as described in subsection 5.2.2.8.5. In addition, Volume III, Appendix I, describes alternative methods for disposal of the waste by-products of CDTF training that were investigated as part of the review of alternatives developed as part of the EIS. Selection of the specific *Alternative Technologies* disposal method that will be used for the disposal of the decontaminated waste by-products (as discussed in subsection I.3.4) will be accomplished by the Army prior to the start of training, and periodically as required in the future. The selected method will comply with all Federal, state and local requirements.

1	G-Hea.13 (con't)	In addition to the treatment of decontaminated waste by-products in a thermal treatment unit, incineration at a hazardous waste incinerator, the use of deep well injection or land fills; potential methods which may be used (as discussed in subsection 5.2.2.8.5 and Appendix I of Volume III) include: • Electrochemical Oxidation; • Oxidizing Agents Plus UV Light; • Biological Processes; • Wet Air Oxidation; • Supercritical Water Oxidation; • Solidification and encapsulation of liquids and solids; • Molten Metal Pyrolysis; • Catalytic Fluidized-Bed Oxidation; and • Catalytic Oxidation. As noted in Newsletter No.2, which was published in June 1996, "...as part of the training alternative formulation process, several alternative waste disposal methods were identified and considered. Based on this review, it has been determined that an alternative waste disposal process is preferred by the Army. This alternative method (the Army's Proposed Action) will include the segregation of wastes types, and off-site disposal of these decontaminated or neutralized waste items by appropriately licensed contractors in accordance with all applicable Federal, state and local regulations and in accordance with established procedures at Fort Leonard Wood. Therefore, under the Army's Proposed Action for this training activity, a Thermal Treatment Unit would not be constructed to dispose of wastes generated by the CDTF." A similar procedure is currently being used by the Army demilitarization program at several locations. Subsections 4.8.1, 5.2.2.8.5, 5.2.3.8.5, and 5.2.4.8.5 of the EIS which discuss waste handling and management at FLW, have been augmented to provide additional information on existing procedures and proposed BRAC related procedures.
2	G-Hea.14	Biological training will be limited to training with *biological materials that simulate biological agents*. These materials are listed in subsection 3.3.3.2.1. Information concerning these materials is also provided in Volume III, Appendix B, subsection B.12.1.
3	G-Hea.15	Information concerning these materials is also provided in Volume III, Appendix B, subsection B.12. The transportation and handling of the binary components has been considered in subsection 5.2.2.8.5.

G-Hea.16	Subsection B.12.8.4 Radiological Materials Processing and Disposal, provides additional information to augment subsections 4.8.8 and 5.2.2.10.3 by providing more specific details concerning existing FLW procedures for the use, storage and disposal of radio isotope materials.

Lebanon Area Chamber of Commerce

PUBLIC HEARING AND OPEN HOUSE
Fort Leonard Wood, Base Realignment and Closure Actions - 1995
COMMENT SHEET

If you are interested in providing comments concerning the Draft Environmental Impact Statement for the realignment of the US Army Military Police School and US Army Chemical School to Fort Leonard Wood, please provide your written comments below and send to the address noted, or leave this form in the designated location at the November 14, 1996 Public Hearing and Open House.

As a representative of the Lebanon Area Chamber of Commerce, and also Breech Medical Center in Lebanon, I would like to express my unqualified support for the move to FLW.
I have attended many of the functions associated with the BRAC, and am very impressed with the preparation, and implementation of this project.
My concerns with regard to this have all been answered, and I am convinced that the utmost care will be taken to ensure safety as well as environmental concerns.
Thanks for the efforts to inform and communicate. I know I represent many from Lebanon who chose not to attend due to the inclement weather.

(additional space on the back) >>>>

SEND COMMENTS TO:

Mr. Alan Gehrt

US Army Corps of Engineer
Kansas City District
601 E. 12th Street
Kansas City, MO. 64106-2896

YOUR NAME: Gary Pulsipher
Lebanon Area Chamber of Commerce
Organization: Breech Medical Center
Address: 325 Harwood
Lebanon, MO 65536

	Comment noted.

Missouri Coalition for the Environment
(G-MCE)

Effective Citizen Action Since 1969

Missouri Coalition for the Environment

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November 25, 1996

U.S. Army Corps of Engineers
Kansas City District
601 E. 12th Street
Kansas City, Missouri 64106-2896
Attention: Mr. Alan Gehrt (MRKEP-PR)

Re: DEIS for relocation of US Army Chemical School and Military Police School to Fort Leonard Wood, Missouri

Dear Mr. Gehrt:

Enclosed are supplemental comments on this DEIS submitted on behalf of the Missouri Coalition for the Environment. If there should be any need to communicate with me, you may reach me at 314 N. Broadway, Suite 1830, St. Louis, Missouri 63102-2097, telephone (314) 231-4181, facsimile (314) 231-4184.

Sincerely yours,

Lewis C. Green

LCG/lle
enc.

SUPPLEMENTAL COMMENTS PRESENTED ON BEHALF OF MISSOURI COALITION FOR THE ENVIRONMENT RESPECTING OCTOBER, 1996, DRAFT ENVIRONMENTAL IMPACT STATEMENT ON RELOCATION OF US ARMY CHEMICAL SCHOOL AND US ARMY MILITARY POLICE SCHOOL TO FORT LEONARD WOOD, MISSOURI

Several members of the Missouri Coalition for the Environment (Coalition) have presented questions or comments concerning this DEIS. These comments supplement those presented by other members of the Coalition.

THE PROPOSED ACTION

Any EIS must begin with a description of the proposed action. The DEIS correctly recognizes that the proposed action includes relocating the Chemical School from FMC to FLW. 2.2. This means relocating all Chemical School training methods to FLW as they are currently (at the time of the BRAC decision) conducted at FMC. The DEIS incorrectly refers to this proposed action as an "alternative." 3.3.2.1. This is not an alternative which can be cast aside by FLW. This is what BRAC has directed, if it can be lawfully done. By asserting the right to scrap those portions of the FMC training which cannot lawfully be relocated to Missouri, the Army has subverted the BRAC directive, and subverted the DEIS process. At several points the DEIS refers to the preferred alternative as the proposed action, hopelessly confounding two very different concepts in the NEPA process. 1 2

In short, the real proposed action is to relocate the entire school, not just half of the school, or even two-thirds of it. The assumption that the relocated school "will comply with Federal, state and local laws" (5.1.4) is destructive of the NEPA process. The first and most important question which should be addressed in the DEIS, and is instead shunted aside, is whether the school (the entire school) can lawfully be relocated at FLW. This assumption circumvents any objective analysis of the environmental impacts. 3

The description of the proposed action should enumerate the elements of the training given at FMC, not merely the goals. The description must specify the chemicals used there, the quantities of those chemicals used, and the applicable time frames. Until that has been set forth, one cannot assess the environmental impacts of relocating. 4

It is clear that FLW will say anything in order to get a foot in the door. If some part of the school can be moved to FLW, and lawfully permitted, then FLW will be able to apply massive political pressure to conduct other school activities at FLW, regardless of their environmental impact and regardless of the environmental laws, because nobody wants our soldiers to be inadequately trained. Only last year FLW assured the Missouri Air Conservation Commission (ACC) and the people that an annual fog oil throughput of 63,000 gallons would be ample to conduct the FMC obscurant training activities, and obtained a permit (now being appealed) from the ACC to use that quantity. This was

clearly absurd. The colonel who conducted the obscurant training at FMC pointed out: "the Missouri smoke permit allows us to conduct roughly 25% of training to standards, these restrictions would kill both the US Army and US Air Force smoke training." See Exhibit 1 attached. FLW simply doesn't care about the adequacy of training at the beginning. FLW's only goal is to move some part of the school here, and get started, planning to enlarge the training activities later. 5

In NEPA jargon, this kind of partitioning of the proposed action is commonly referred to as unlawful segmentation. In permitting jargon, this kind of permit application is commonly referred to as circumvention. The proposed action which is to be reviewed under NEPA is the entire proposed action, not simply a part of it to enable the agency to get a foot in the door. The DEIS must evaluate those chemicals, and those quantities of chemicals, which the agency really plans to use, not just a small portion of them. 6

The description of the proposed action is totally inadequate to permit a meaningful review of the environmental impacts of the proposed action.

THE DEIS FAILS TO SUPPLY NECESSARY INFORMATION

One cannot respond to a DEIS if the DEIS fails to provide the information needed to support an assessment of the environmental impact of the proposed action. This DEIS not only fails to provide an adequate description of the proposed action, but fails to provide much other information which is essential. A few examples will be enumerated below.

Section 9 of Volume I lists many references. Many of these are quite recent, and most are not available in any library known to the undersigned. If the DEIS tells the reader where they are available for review, the undersigned has not found that information. It is impossible to review this DEIS without access to those documents. A part of the NEPA process is to make these references available at locations conveniently available to the public, such as the St. Louis County Library. 7

It is clear to the undersigned that the obscurant training proposed in this DEIS (much less than the proposed action) cannot lawfully be permitted at FLW. However, that cannot be demonstrated without evidence. At 5.2.2.3.7 the DEIS states that the Army has initiated additional studies and programs to evaluate and possibly refine some of the assumptions used in dispersion modeling. The quantities used in the dispersion modeling litigated in part in 1995 have already been changed. One cannot fully evaluate the environmental impact of the newly proposed obscurant training without the results of these additional studies and programs, and a new dispersion model, and a detailed explanation of the choice of model and the assumptions made and the resulting predictions. The cavalier attitude of the DEIS toward this information presumably reflects the improper assumption that somehow the relocated school will comply with the law. 8

The DEIS explains, in the abstract, the general process of determining a PSD increment. The DEIS then reports that an increment has been determined. There is no way to consider whether the determination may have been made properly or improperly, without any of the facts. The DEIS should tell us exactly how it was determined. What was the baseline date? What sources were included, and excluded? From what source was the source information obtained? What sources or possible sources were excluded? The determination of the PSD increment must be explained. 9

Table 4.3 lists estimated air emissions from operations at FLW, identifying the source as HBA. Surely HBA must be able to explain the source of its alleged information. Is that taken from the 1994 EIQ? Isn't there a 1995 EIQ? What did HBA do to verify the information, if it came from FLW, a demonstrably unreliable source of information? 10

The DEIS reports that FLW applied for a RCRA Part B permit in 1988, but it has not yet been granted. Why? 11

In 1992 EPA identified 52 solid waste management units and 2 areas of concern which may require further investigation at FLW, and we are told that FLW is preparing an Installation Action Plan. This Plan should be completed and made available. 12

The alternative assessment respecting disposal of CDTF waste is, as nearly as we could determine, incomplete. FLW does not plan to incinerate the waste on the post. That is not something the Coalition would like to see, either. However, something must be done with it. A NEPA review is not sufficient if it simply concludes, as this DEIS concludes, that FLW will decide later what to do about it. See *Foundation for North American Wild Sheep v. United States Dep't of Agriculture,* 681 F.2d 1172, 1181 (9th Cir. 1982) ("NEPA expresses a Congressional determination that procrastination on environmental concerns is no longer acceptable . . . [The NEPA document] represents an agency decision to act now and deal with the environmental consequences later.") See also *Seattle Audubon Soc'y v. Espy,* 998 F.2d 699, 704 (9th Cir. 1993). If the DEIS did tell us what is proposed, it would be impossible to evaluate the proposal. We do not know the chemical composition of the waste. Indeed, we have been told that neither FLW nor HBA knows the chemical composition, either. Apparently nobody has requested that information from FMC. Without such knowledge, environmental review is meaningless. Another member of the Coalition has submitted a list in writing of 21 questions relating generally to this waste. Until those questions are answered, the public cannot adequately review and comment on the DEIS. 13 14

According to 5.2.2.3.1.1 the VOCs to be generated by fuel apparently dumped on the ground are not included in the VOC calculations of the DEIS, because they are difficult to estimate. Difficulty does not justify excluding these VOCs from the calculation. In essence, what the DEIS is doing here is assigning a value of 0, which we know is not correct. A chemical engineer can make a conservative estimate which can be used in these calculations. 15

The DEIS tells us that some modeling was performed with respect to the proposed incinerator for CDTF waste in connection with the application for a Missouri air pollution permit for the incinerator. The modeling assumptions, data, and conclusions have not been provided. These are essential. 16

The DEIS reports (5.2.2.11.A) that the Army has requested formal Section 7 consultation with USFWS. The results of that consultation must be presented in any DEIS. The DEIS further reports that FWS will issue a Biological Opinion, and if appropriate a Take Statement. The Biological Opinion and the Take Statement are also essential. One cannot review the environmental impacts without having this information available. Indeed, the entire treatment of threatened and endangered species throughout the DEIS is simply to acknowledge that there may be some harmful impacts, but we do not know yet how bad they will be, and somebody is studying it. This is the antithesis of an environmental impact statement. It is not enough to determine that the agency will go ahead now, and if something bad turns up later, maybe the agency will do something about it. That kind of DEIS has been repeatedly condemned by the courts. The *Wild Sheep* syndrome is running rampant. If the DEIS must await further study, then it can wait. 17

The DEIS states that terephthalic acid will be used in grenades or smoke pot training. The Coalition has been researching fog oil for some time, and has not previously confronted this acid. Is it permitted by any Missouri air permit? Is it included in the estimates of 84,500 tons of fog oil per year, or is it additional to those tons? What is its chemical composition? What are its propensities? Will it add to the particulates which will be generated by the fog oil operations, and the vehicular operations? Or to the VOCs? How much? Where are the studies, analyses, and reports which provide and document this information? 18

The DEIS concedes (5.2.2.11.C.1) that a wetlands jurisdictional determination must be made and additional environmental documentation prepared before training can proceed. The *Wild Sheep* syndrome rises again. That determination must be made, and the documentation prepared, before the DEIS can be completed. It is impossible to evaluate the environmental impacts of these proposals without that information. 19

Volume IV asserts that 2 studies are being conducted simultaneously with the DEIS that are investigating the effects of obscurant training on humans and threatened and endangered species, and until the studies are completed, the DEIS will simply assume that fog oil training will have little to no impact on humans and threatened and endangered species (pages 160, 169, 173). These studies are properly conducted as a part of the DEIS process, but they are to be completed before the DEIS is completed. The *Wild Sheep* syndrome is asserting itself again. 20

It is especially important to focus on the materials being used at FMC, and the quantities of them, not only with respect to their toxicity but also with respect to their 21

contributions to particulate or VOC emissions. As of March of 1995, we understood that FMC was using not only fog oil but also hexachloroethane smoke pots, and colored dye smoke grenades which use white phosphorus and colored smokes of some composition, and brass flakes, and graphite powder. We were further told that FMC expected that by 1997 the school would be using millimeter wave obscurants similar to radar chaff, the composition unknown to us. See Exhibit 2 attached. The DEIS acknowledges the existence of the fog oil, and acknowledges that the fog oil will contribute to emissions of VOCs or particulates. The DEIS acknowledges the existence of the hexachloroethane smoke pots, and asserts that they will be replaced by terephthalic acid, and very briefly acknowledges a question about the toxicity of that substance, but does not acknowledge any possible contribution of that substance to VOC or particulate emissions. If there is no potential contribution, the DEIS should so state, and explain. If there is any possible contribution, that should be evaluated, especially in view of the PSD limitations.

2
cc

The DEIS acknowledges (5.2.2.15.B.2) the existence of the phosphorus, and its possible toxicity. The DEIS does not acknowledge any possible contribution of the phosphorus to VOC or particulate emissions. That subject must be fully evaluated. The DEIS does not appear to acknowledge even the existence of other dye colored smokes.

2

The DEIS does not acknowledge the use of the brass flakes which, as we understand it, are to defeat infrared elements. It seems clear that brass flakes would contribute to particulate emissions, whether or not they would contribute to VOC emissions, or have any toxic propensities. This subject must be fully explicated in the DEIS.

2

The DEIS acknowledges that the Army intends to use graphite powder as an obscurant. 1.4.6.5. However, the DEIS says that this use is still in the developmental stage, and because the training activity is not fully defined at FLW it is not possible to develop realistic training alternatives or conduct a meaningful analysis in this EIS. The DEIS says that programs of instruction for graphite use have not been developed or tested. What is the source of this information? It seems directly in conflict with what we have been told by FMC. Has anyone from HBA visited FMC and exhaustively inquired about exactly what does take place there? Even if the plans are as undeveloped as the DEIS represents (which apparently is not true), the plans to use graphite must be evaluated as a part of this EIS. It is not enough to promise to do a supplemental permit application and supplemental EIS at a later date. In putting aside the graphite, the DEIS is permitting FLW unlawfully to segment the proposed action. Interviews at FMC could easily develop, at least, a worst-case estimate of quantities of graphite. Those quantities must be fully evaluated in this DEIS.

2

FMC represented in March of 1995 that millimeter wave obscurants (similar to radar chaff) are expected to be available for use by 1997. No reference to these obscurants has been found in the DEIS. What does FMC have to say about this in

2

October of 1996? Unless something has happened to derail this expectation, these obscurants must be identified and fully evaluated in the DEIS.

The undersigned has been unable to find any adequate description or assessment of vehicular emissions. The DEIS implies that emissions from mobile sources associated with the BIDS training have not been accounted for in any way, and have not been considered at all. 5.2.2.3.3. The DEIS also apparently states that vehicular emissions associated with the fog oil training have not been accounted for or assessed in any way. 5.2.2.3.7. The reason stated at the latter reference is that these are to be accounted for by use of a background figure. That is not correct. A background estimate may be expected to account for routine vehicular emissions, but it does not begin to account for specialized vehicular emissions above the routine. There will be substantial vehicular emissions associated with some of these training activities, especially the obscurant training (more than 3,000 gallons of gasoline), and they must be accounted for with respect to both VOCs and particulates. 26

The DEIS represents that the so-called RCP alternative (really, the proposed action) uses a total of 125,500 gallons of fog oil annually. The DEIS must assess the impact of what FMC expects to use. If the use is expected to increase, that increased usage must be evaluated. For example, FMC has asserted that the use of 20 mobilizing chemical units in the obscurant training would roughly double the gasoline and fog oil totals per year. The implication is that somebody was suggesting or planning the use of 20 such units. Has HBA interviewed FMC to find out what plans the school really has? 27

FMC has asserted that the smoke generators use gasoline to aerosolize the fog oil. Consumption of that gasoline will surely have impacts related to VOCs, and perhaps to particulates. Where has the DEIS included the information relating to this usage? 28

The DEIS concedes (3.3.3.7.2) that the preferred alternative will reduce by half the amount of time each student may operate the M-56 generator system, from approximately 10 minutes to approximately 5 minutes, in order to acquire sufficient familiarity with the system to operate it effectively in field conditions, and will reduce even more the amount of time that each student may operate the M-157 generation system, from approximately 20 minutes to approximately 4 minutes, including only 2 minutes for a hot start and 2 minutes for a cold start. The DEIS concedes that training under realistic military operational environments is critical to insuring a thorough understanding. 5.2.2.17.1.2. The DEIS concedes that the greater time allowed by the so-called RCP alternative, which is really the proposed action, provides "a minor increase in training effectiveness" over what the DEIS presents as the preferred alternative. Nevertheless, somehow somebody has decided that the lesser training time is sufficient. There is no explanation or justification of that determination. We are not told who made such an extraordinary decision, improbable on its face. Has HBA interviewed the people who have experience with this training at FMC? Such an extraordinary, obviously improbable determination requires substantial explanation and justification. This is especially noteworthy in view 29

of the obvious self-interest of FLW, which appears to be the primary or sole source of information for HBA. Clearly, FLW will make any representation needed, as it did when it represented 65,000 gallons to be the annual throughput figure to the ACC in 1995, in order to obtain some kind of permit in Missouri. Once FLW has a foot in the door, FLW assumes that it can go back and increase its authority. This obvious bias would color any supposed or pretended judgment as to adequacy of training. 2 cc

What is needed here is an acknowledgment, not only of the fact that the proposed action (what is done at FMC) cannot lawfully be permitted in Missouri, but also of the fact that the preferred alternative being put forth by FLW drastically alters the school, greatly reducing its effectiveness, and also cannot be lawfully permitted at FLW. 30

In the same manner, the time available for the obscurant, employment proficiency test (mobile operations) (training goal 7.3) and the obscurant, employment proficiency test (field training exercises) (training goal 7.4) have been drastically reduced, in an effort to hold down the quantities of fog oil to be used, in the hope of achieving a number low enough to be permitted in Missouri. The DEIS presents the same self-interested claim that somehow the proposed training will nevertheless be adequate, although what is done at FMC is admittedly superior. The DEIS presents the same failure to explain any valid basis for the judgment that the reduced training would be adequate. All of these reductions or cancellations of the training presented at FMC are, of course, unlawful, because BRAC has required that the entire school be relocated, if that is lawful, not just a part of the school. But they must be fully acknowledged, and any effort to justify them must be fully documented. 31

Similarly, FLW proposes to abandon the training with unsealed radiological materials outdoors. 3.3.3.8.1. Of course, this is a blessing, from the point of view of the Coalition, and all those persons who reside near FLW. But it is not lawful. BRAC has directed that the school be transferred, not that a major portion of the training be abandoned. The comments on this subject in the DEIS are obscure. The DEIS asserts that the training at FMC "includes the infrequent use of unsealed . . . radiological sources in exterior training environments." But the description of the preferred alternative seeks to give the impression that FLW is merely proposing to abandon an authority which has never been used at FMC. This needs to be clarified. If, in fact, unsealed radiological sources are used outdoors at FMC, then this is another respect in which FLW is abandoning the mandate to move the entire school to FLW. 32

The DEIS acknowledges that in 1995 FLW applied for and obtained an air permit for fog oil training based on 65,000 gallons of fog oil per year and 3,700 lbs. per day usage, although the DEIS neglects to record that that permit has been appealed. The DEIS reports (5.2.2.3.7) that at the time the air permit was obtained, these limits were thought to accurately reflect Army training requirements. By whom were they thought to accurately reflect Army training requirements? At the hearings before the ACC, the Coalition proved that in fact FMC was using nearly double this quantity. Although FLW 3

refused to acknowledge that fact, and members of the AEC sneered at the suggestion that the Army would misrepresent anything, nobody really thought at that time that these limits accurately reflected Army training requirements. A statement as improbable as this requires documentation and explanation. 33 cont.

The DEIS goes on to say that, as part of the EIS analysis, it was determined that the initial fog oil training requirements identified by the Army did not accurately reflect the full extent of fog oil training that would be required. It is gratifying that the Army has finally acknowledged that much, after forcing the citizens to litigate the Army's misrepresentations in 1995. But this needs explication. By whom was this determined? When? On what basis? Has HBA interviewed anybody experienced in the obscurant training at FMC to determine what is really needed to do the training job correctly, and what is expected to be needed in the next two or three years to do the training job effectively? Extensive interviewing of the persons with first hand knowledge and experience in this area is essential simply to identify what the proposed action is. Self-serving statements from FLW cannot be substituted for the facts. 34

The DEIS acknowledges (5.2.2.3.7.1) that what is referred to as the RCP alternative, really the proposed action, would exceed both the yearly and daily PM_{10} maximum increments, with a long-term significant adverse impact to air quality. Apparently this is an acknowledgment that the transfer of the FMC school as it presently operates to FLW would be unlawful. This is what the EIS really is supposed to be all about. This acknowledgment should not be obscured, but should be straightforward. 35

The DEIS acknowledges that the preferred alternative, referred to as OPTM, which is unlawful because it is not what BRAC has directed, would inevitably exceed the daily PM_{10} increment allowable, and would have a long-term significant adverse impact. The DEIS asserts that adverse impacts are identified in Table 5.52. However, all that is disclosed in that table is that maybe FLW will reduce the fog oil usage, and it will inevitably have to obtain a different air permit, and it may provide an offset of PM_{10} on FLW. The *Wild Sheep* syndrome rises again. What the EIS should disclose is what would be done, not what might be done. Reducing the fog oil usage would further reduce the effectiveness of the training, and the DEIS does not seem to address that question. 36

If FLW were to try to provide an offset, what would be the impact of that? What operations would have to be curtailed or shut down? What would be the effects? 37

If FLW is going to consume most or all of the annual or daily increment with this relocation, what will be the impact of that? To what extent will that limit future activities or growth in central Missouri? 38

The use of the word "or" in Table 5.52 is misleading. Providing an offset of PM_{10} would not be an alternative to pursuing a revised permit. 39

The DEIS provides no basis for the assumption that a revised permit would be lawfully granted. There is no dispersion model applicable to this alternative. 4

The DEIS generates massive confusion in its treatment of the air quality impacts of the alternatives separately in 5.2.2.3 and 5.2.2.10. With respect to this alternative, the former section concedes that the alternative would exceed the maximum daily increment, whereas the latter section asserts that both annual and daily amounts would exceed limits set to protect human health. There is no adequate explanation of the latter statement. It apparently assumes a dispersion model, which has not been revealed in the DEIS. It should be fully explained, and these two sections should be set forth in a way that is comprehensible, with adequate explanation and documentation. The human health impacts should be evaluated. The concession that this alternative would exceed the limits set to protect human health, and therefore there would be a significant adverse impact, should be reconciled with the representation in Table 5.52 that there would be no human health effects. The same difficulty of making sense out of these representations of two different sections and a separate table, none of which seem to match, applies to the various alternatives. 4

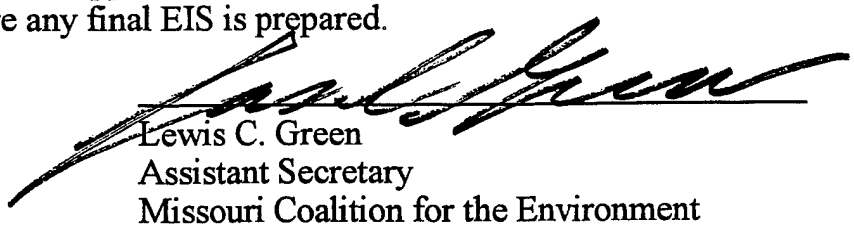
The DEIS asserts that the smoke grenades will use an ignition mixture consisting of iron oxide, titanium zirconium. 5.2.2.15.B.2. What happens to this stuff? Can it be toxic? Will its use contribute in any way to emissions of VOCs or particulates? 4

The entire multi-volume DEIS reflects a notable absence of air pollution regulation expertise on the part of the preparers. There is no way that the public can be informed by this DEIS of the air pollution impacts of any of the so-called alternatives, without a true evaluation of those air pollution impacts. 4

At page 161 of Volume IV appears the disturbing statement that air quality at the FLW boundary will be maintained in accordance with the NAAQS, as required by the Missouri permit, which is being appealed. Only a very limited expertise is needed to recognize that air quality must be maintained in accordance with the NAAQS within the FLW boundaries, at any point which is open to the public. 4

Without a meaningful analysis, explanation, and assessment of air quality impact, and of the environmental consequences of that impact, the document is substantially useless. It fails to inform the public of the environmental impacts of the proposed action or the alternative. It fails to set forth the various unlawful features of the proposed action, and of the various alternatives, in causing or contributing to exceedance of the NAAQS. 4

The information requested above, as well as that requested by other persons commenting on the DEIS, is necessary to enable the public to respond appropriately to a DEIS. That information should be supplied, and a comment period of at least sixty (60) days provided thereafter, before any final EIS is prepared. 46



Lewis C. Green
Assistant Secretary
Missouri Coalition for the Environment
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St. Louis, Missouri 63102-2097
(314) 231-4181 telephone
(314) 231-4184 facsimile

X-63

DEPARTMENT OF THE ARMY
U.S. ARMY CHEMICAL SCHOOL
FORT MCCLELLAN, ALABAMA 36205-5020

REPLY TO ATTENTION OF

ATZN-CM-SAC 16 May 95

MEMORANDUM FOR MAJ TELLER, HQDA, OSJA, ENVIRONMENTAL OFFICE

SUBJECT: Review of Draft Air Permit, Fort Leonard Wood Smoke Training

1. The purpose of this memorandum is to provide comments on the subject document per your request. More detailed comments are found at the enclosure.

2. The State of Missouri smoke permit restrictions, if implemented, will create overwhelming degradation to Chemical Mission readiness. The restrictions will cut back the minimum amount of annual fog oil use by 30%. The daily allowance for smoke training time will be cut by 75%. After suffering these unacceptable losses, it further limits our Joint forces to smoke operations during weather conditions which may exist only 60% of the year. The smoke permit virtually eliminates more than one smoke event per day. The impact would be violations (subject to fines) for 92 days when two events are trained, another 56 days when three events are trained, and another 21 days when four separate events are underway at one time. If allowed to stand, the Missouri smoke permit allows us to conduct roughly 25% of training to standards, these restrictions would kill both the US Army and US Air Force smoke training.

3. During the Chemical Functional Area Analysis on 31 Oct 94, the Vice Chief of Staff challenged the Army to "take the lead on proactive involvement with agencies drafting environmental regulatory requirements that impact on chemical training on Army ranges. Focus on leading towards the least restrictive measures that provide the maximum training opportunities. (Action ODCSOPS)"

4. Under Base Realignment and Closure actions, Fort Leonard Wood, unfortunately without coordination with the Chemical School, applied for a smoke permit and variance. The Missouri smoke permit restrictions will inadvertently squash the VCSA's goal and tragically cripple the capability to conduct smoke training. One of the most stunning restrictions of this permit is the loss of capability to train with smoke hand grenades, vehicular smoke grenades, smoke pots, infrared defeating grenades, riot control agents, and large area infrared obscurants. The Reserve Component smoke training at the Chemical School would also be a casualty.

5. If you have questions regarding this quick assessment of the smoke and obscurants issue, please call me, DSN 865-6228 or commercial 205-848-6228 or Fax 865-6786.

Encl

EDWARD W. NEWING
LTC, CM
Special Assistant to the Commandant

X 63

COMMENTS ON DRAFT AIR PERMIT, FORT LEONARD WOOD SMOKE TRAINING, 11 APRIL 1995

1. pg 1, title Fort Wood provided you a draft air permit. Since the issue is now at the variance hearing stage, where is the "final"? Considering the impact this has on Chemical Mission Area training, we need to see the real thing.

2. pg 1, title The basis for permission is to "construct a static and mobile fog oil smoke *training facility*. This nomenclature is not descriptive of what the Army proposes to do. Could it be that Missouri Clean Air laws do not cover field military training and ranges? The only "facility" being constructed is a storage area for fog oil drums. Fort Wood will blaze road networks through some wetland areas and possibly construct some observation towers throughout the maneuver area which is already dedicated to other types of training. This curious interpolation of a smoke training area to a "facility" deceives the public as to what the purpose of the permit is for. Since the permit was gained without public comment, it would be difficult for people to know what this is. Since the variance does require comment, perhaps they will understand smoke will not occur in what could reasonably called a fixed facility.

3. pg 1, title If Missouri has authority for Title V of the Clean Air Act, it would seem prudent to mention the Federal statutes, beyond their laws. They still must comply with federal standards and ensure these activities, especially since it is a Federal installation, meet standards. This legal footing is important and not just a cosmetic touch.

4. pg 2, para 1, The annual throughput of only 65,000 gallons is unacceptable. We do not know how this figure was calculated, but it appears to be an average of sort. Forget the averages over a five year period. We calculate training requirements on operational tempo, current and projected. The projected consumption needs to be at least 95,000 gallons per year which includes both the Army and Air Force course loads and training plans. Additionally, all US Army Chemical units (70% of the Chemical Corps) are required to mobilize at the Chemical School. The potential to emit must be written into the permit, which as was explained to DNR previously would roughly double the emissions.

5. pg 2, para 2, The limit of 3,700 lbs during a 24 hour period is unacceptable. The Army and Air Force need more than one hour per day on many occasions. As stated in the cover letter the number of two, three, and four events per day is critical to training loads. If not adjusted, this limitation will cut out 75% of our training capability. Additionally, there is no mention of other types of obscurants used by the Chemical School. Smoke hand grenades (various colors), vehicle grenades (red phosphorus and brass flakes), HC smoke pots, safer smoke pots (teraphalic acid), and large area infrared obscurant materials are essential portions of training and qualifying chemical soldiers. This permit excludes this type smoke.

6. pg 2, para 3 The PM10 less than 2,600 lbs per hour cannot ever be met. Even though droplet sizes average about one micron, we would violate this limit every time we turn a generator on, drive through dust, or use infrared obscurants (by design greater than 10-14 microns in size). IR obscuration is a critical skill to countermeasure enemy IR target acquisition devices. It is not possible to simulate this sensor/obscuration phenomenon at this time. It is a learned behavior at the institutional level.

7. pg 2, para 5 Reporting of violations appears to be too slow. At lot of damage could ensue unless a more rapid methodology is adopted. This permit needs to adjust threshold limits beyond 65,000 gallons per year to at least the combined total of current and projected training loads (we could live with a bare bones of 95,000 gal/yr). Scaling back training by 30% is unacceptable to readiness

8. pg 3, para 7 How will the QAPP plan effect the "users" the Chemical School and Air Force Disaster Preparedness Technical Training? The QA plan must be coordinated with potential users.

9. pg 3, para 8 Someone needs to calculate the voluminous record keeping costs. Who is the Permitee: Fort Wood personnel or the Chemical School? How is Fort Wood going to implement this? Why is only fog oil record keeping necessary? Other obscurants need to be tallied and contribute to the entire atmospheric load. The emissions from the diesel engines of HMWWVs and APCs as well as the MOGAS powering the smoke generators are sources. Does this add to the poundage allowed per day? Other military vehicular training, automobiles, electrical generators, construction equipment, railroad activities, on Fort Wood apparently need to be part of the daily total as well.

9. pg 4, para 13 What equipment should be used or is available for MET data? Who collects it? If soldiers and airmen are to do this who certifies them and when, how often? Calculation of mixing height is of particular concern, from where is it measured and how does it apply to each site and length of plume.

10. pg 4, para 14 Limitations on Operations. How often (per month) do these conditions exist? Need to go back at least 5 years to see if we are handcuffed by artificial restraints. This has the potential, when synergistically combined with reduction in annual gallons allowable and only one hour per day could absolutely shut down smoke training.

11. pg 4, para 15 I do not understand how a state agency can dictate the forecasting lead times. They establish a standard and now want to tell the Army how to suck eggs. This State agency is really beyond their authority to tell us *how* to manage compliance with standards.

12. pg 4, para 16 Does this mean MET conditions (air stability and wind direction) are to be continuously monitored/measured or just before the event. Need to evaluate the percent of time wind directions and speeds are unfavorable. Quick reference indicates unfavorable conditions exist around 35% of the time. The only available wind rose is twenty years old.

13. pg 5, para 16c If the Director is meant to be the Director of DNR, this presents an interesting legal situation for the Army. This blanket authority seems to be a catch-all phrase which allows the Director to unlatorally terminate Army smoke operations. This is absurd. If permit violations occur, enforce it, but the Director should have no legal basis terminate smoke for "to be determined" reasons. Perhaps this is the place where an insert can state the Director might be overruled by the EPA or other Federal Agencies. These mysterious powers of the Director place the Army at risk and should be eliminated.

14. pg 6, para 23 We would be automatically in violation if tried to maintain current training levels. The air quality modeling standards need to be addressed in this document. Air models used by the EPA are not as specific for cloud dynamics and concentration as the ones established by the Army (formally the Atmospheric Sciences Laboratory). EPA models use industrial chemical stack emissions and translate that to smoke generator sources, some of which are mobile. No known EPA model is an accurate representation. The Combined Obscurant Model for Battlefield Induced Contaminants (COMBIC) is the worlds best model and should be used, especially since it is possible to model all types of obscurants, not just fog oil. Other sources are the Joint Technical Group for Munitions Effectiveness-Smoke and Aerosols Group assessment reports which have tailored smoke munitions and generators for the past ten years. If we are going to use models, we should do it correctly.

15. pg 6, para 24 Injury to plants and animal life have not been thoroughly documented. Sierra Club and others note (quite accurately) the Army analyses are subjective and most are inconclusive. The Army cannot avoid the challenge that specific tests have not been done at Fort Wood or Fort McClellan. Army references cite known studies which treat flora and fauna with about 5,000 times the amount that might be expected from Army fog oil operations. I intuitively believe it is safe, one cannot measure the downwind deposition, but it is hard to avoid the criticism that it has to go somewhere. The worst case is a challenge of fog oil spillage at the generator sites. Fort Wood will mitigate this with their Installation Spill Contingency Plan. It is difficult to attribute direct or approximate damage to plants and animals if no base line is available. How does the other obscurants affect plants and animals? DNR has the Army assessment data, but chose not to allow these in the air permit. What is different about fog oil? Unreasonable enjoyment of life is another nebulous term. Smoke by its very nature may be considered a nuisance and IR obscurants are defined as nuisance dust. I see big problems here. It is a legal tarpit which places the entire art of smoke generation for the survival of fighting forces at tremendous risk.

16. pg 7, Attachment A These four sites have not been measured. The only data which exists at Fort Wood is measured from the airfield. Historical wind data is ancient. Considering the relation of specificity required to comply with this permit, microclimatic studies should be performed at each of these sites. As stated in Fort McClellan's 1993 Smoke Report (but rejected by Fort Wood) seasonal wind patterns and speeds limit smoke training at these sites because of the potential for offpost migration or interference with other post activities. Conservative estimates are that between 25-50% of the time, smoke operations will be limited. Since we use smoke 250 days of the year, further erosion of training opportunities are certain. Exclude the non trafficable terrain, avoidance of endangered species areas, small ponds, wetlands, impact areas, the infamous million dollar hole area, cantonment area, standoff distances between the installation boundary and smoke areas, the major thoroughfare bisecting the installation, the bombing range and there is less space than it appears. The bottomline is that weather is one of the most limiting factors of all. We can schedule classes, ranges, locations, but we cannot schedule Mother Nature. From someone with over twenty years of smoke generator experience I am telling you this smoke permit is a disaster for the future of the Army's smoke program.

EX N

March 23, 1995

Special Assistant to the Commandant

Subject: Request Under the Freedom of Information Act

Mr. John A. Young
State of Missouri Department of Natural Resources
Division of Environmental Quality
Post Office Box 176
Jefferson City, Missouri 65102

Dear Mr. Young.

This letter is in reference to your request regarding fog oil use at Fort McClellan, Alabama. The military stock number of fog oil is 9150-00-261-7895. Other data helpful for identification is Fog Oil: 55 gallon drum (81349) MILF12070 Type SGF-2.

year (gallons of fog oil) (variance due to US Army Reserve training flux)

1994 (93,800) 1993 (116,350) 1992 (56,400) 1991 (54,970) 1990 (65, 860)

If this request is the basis for determining air emission calculations, you should be aware of other types of fuel and obscurants used on Fort McClellan. Smoke generators use gasoline to aerosolize fog oil droplets. The consumption rate is 3 1/2 gallons of gasoline per 55 gallons of fog oil.

Other sources include hexachloroethane smoke pots, colored dye smoke grenades, infrared defeating obscurant grenades (brass flakes) and large area infrared defeating obscurants (graphite powder). Millimeter wave obscurants (similar to radar chaff) are expected to be available for use in the next two years. Environmental assessment information for some of these items are enclosed. The "potential to emit" with 20 mobilizing chemical units, would roughly double the gasoline and fog oil totals per year.

Sincerely,

Edward W. Newing
Lieutenant Colonel, U.S. Army
Special Assistant to the Commandant

Enclosures
Environmental Assessments for Red, White, Plasticized White Phosphorus; Dye Colored Smokes; Hexachloroethane (HC) Smoke

1	G-MCE.01	The BRAC Commission specified that the Chemical School and the Military Police School will be relocated to FLW as discussed in subsection 2.2. Consequently, as stated in your comment the Army must evaluate the environmental impact of relocating these missions to FLW (EIS subsection 1.3.2.1). As stated in Subsection 2.3.1, the decision to be made by the Army as a result of this EIS process is focused on identification of alternative training methods for implementing the mandated relocation of the schools; alternative land use and facility plans that are capable of providing required support facilities at FLW; and alternatives for the relocation of personnel from FMC to FLW. BRAC law does not mandate relocating these missions using the exact training methods that are currently used at FMC, and numerous scoping comments were received which requested that the EIS review alterative methods for accomplishing each element of the required training. The Army will continue to accomplish the broad training missions assigned to these schools, and each of the training alternatives identified in the EIS (RCP, OPTM and EPTM) meet this requirement as documented in Volume IV of the EIS.
2	G-MCE.02	As stated in the EIS, Section 2 was designed to provide an overview of actions to occur at FLW as a result of the mandated relocation of the schools. Subsection 2.1 goes on to say that the reader should refer to Section 3 for a detailed description of alternatives for implementing each primary element of the action (mission activities, facilities and population movement), including the Army's proposed implementation action for each element based on the rationale presented in pertinent section of the EIS. After conducting an impact analysis of each alternative (including the identified proposed action), the EIS concludes that the Army's "Preferred Action" is to implement the Optimum Training Method (OPTM) in conjunction with the Combined Headquarters and Instruction Land Use and Facility Plan and the Phased Move of personnel. The use of the term "Preferred Action" is limited to a concluding statement at the end of the Section 5 impact analysis, and a concluding statement at the end of the Executive Summary. This approach is consistent with guidance provided in the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act including: 1) 40 CFR 1502.10 which requires inclusion of a section that defines "Alternatives Including Proposed Action"; and 2) 40 CFR 1502.14(e) which states that the proponent agency should identify it's "preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final...".

1	G-MCE.03	All of the functions and training conducted by the Chemical and Military Police schools, including training for other Services, will be relocated to FLW under all of the implementation alternatives. See response to Missouri Coalition for the Environment comment number 1 (G-MCE.01) for further discussion of the BRAC Commission's recommendations and relocation requirements. Each of the training method alternatives analyzed in detail in the EIS (the RCP Alternative, OPTM Alternative and EPTM Alternative) have the potential to meet all of the mission requirements of the Chemical School and the Military Police School. As documented in subsection 3.2.1 and subsection IV.1 of Volume IV, the first level of screening used to select reasonable training method alternatives (out of the universe of alternatives originally identified) was to eliminate training methods that did not have the potential to provide the required minimum level of skill development. Therefore, each training method implementation alternative meets the intent of the BRAC Commission recommendation and subsequent legal requirement to move the schools. Where the desired training methods do not meet current Federal, state or local laws a discussion has been included in subsection 5.5 which states how the training method will be modified or mitigated to insure compliance with requirements. The Army (including the schools that will be relocated) must comply with Federal, state and local regulations.
2	G-MCE.04	Appendix B provides a list of chemicals or materials that simulate biological agents, and other simulants that will be used in training, along with the approximate quantities of these items that will be used on an annual basis. The scheduling of training is dependent on a number of factors, including, but not limited to, student load, weather conditions, and permit and regulatory requirements. It should be noted that specific training activities for the schools (and all other DOD elements) are subject to continuous evaluation and change; consequently including a proposed training schedule in the EIS would not be appropriate.
3	G-MCE.05	See the response to Missouri Coalition for the Environment comment number 3 (G-MCE.03). Subsection 1.3.2.2 of the DEIS and FEIS discuss the fact that all DOD training missions are subject to continuous evaluation and change, and identifies some of the factors that lead to these changes. The text in Subsection 1.3.2.2 goes on to indicate that all mission changes are subject to environmental review (as defined in Army Regulation 200-2); and that the public will be fully informed of any major new actions that may be considered for future implementation at FLW as a normal part of the NEPA compliance process.

1	G-MCE.06	Section 2, Overview of the Proposed Action, provides a general discussion of the mission activities to be realigned to FLW, the construction of facilities required to support realigned activities, and population increases to occur at FLW. For those persons interested in a more complete description of the proposed action, Section 2 refers the reader to supporting volumes of the EIS which provide extensive detailed descriptions of each element of the proposed action and related alternatives. Subsection 5.2.2.8.5 and Volume III Appendix B, subsection B.2.12.3 contain information concerning the amount of agents, simulants and other training aids the Army proposes to use at FLW. Significant changes to the estimated quantities of training materials that will be stored at FLW will require proper environmental review in accordance with AR200-2, Federal, state, and all other appropriate regulatory agencies. FLW will continue to comply with all applicable regulations. Every effort has been made to thoroughly and accurately describe all new training missions planned for FLW. No pertinent or relevant information concerning potential hazards has been knowingly altered or omitted from the EIS analysis.
2	G-MCE.07	In addition to the DEIS, five major supporting studies were distributed to the nine public information repositories receiving the DEIS. These five key supporting studies are listed in subsection 1.5. These documents were prepared in direct support of the conclusions presented in the DEIS, versus a large number of other documents that were previously prepared, and used as general reference documents. These five major studies included: 1. Human Health Preliminary Risk Assessment 2. Biological Assessment (T&E Species) 3. Ecological Risk Assessment (T&E Species) 4. Ecological Risk Assessment (Amphibians, Reptiles & Birds) 5. Lab Testing of Physical & Biological Samples from Fort McClellan
3	G-MCE.08	See response to Environmental Protection Agency comment number 4 (F-USEPA.04) and State of Missouri, Department of Natural Resources (S-MDNR.06).
4	G-MCE.09	The Clean Air Act establishes the PSD increment. The PSD increments are tracked by MDNR, and used as the basis for air permitting in Missouri. See subsection 5.2.2.3.7 for more information on this topic.
5	G-MCE.10	The emissions were taken from the 1995 Emission Inventory Questionnaire. FLW uses MDNR protocols to complete the MDNR annual EIQ and therefore the information was not verified. Table 4.3 has been clarified by providing additional information concerning the estimated air emissions.
6	G-MCE.11	Subsection 4.8.1 has been modified to clarify the status of the Part B permit.
7	G-MCE.12	Subsection 4.8.1has been modified to indicate that the Installation Action Plan (IAP) is updated annually.

1	G-MCE.13	See response to Heartwood comment 13 (G-Hea.13).
2	G-MCE.14	Subsection 5.2.2.8.5.2 and Appendix I (Vol. III) have been modified to indicate that tests are performed on each batch of CDTF wastewater to verify that the concentration of VX and GB are below the established health related standard of 20 ppb. In addition, further testing has recently been completed, and the results of this testing (showing the analytical composition of the CDTF wastewater) have been included in subsection 5.2.2.8.5 and Volume III, Appendix I. This CDTF wastewater analysis identified the concentration of VX and GB to be below the established standard of 20 ppb.
3	G-MCE.15	See response to State of Missouri Department of Natural Resources comment numbers 6 (S-MDNR.6) and 36 (S-MDNR.36).
4	G-MCE.16	The Army is not proposing the use of a thermal treatment unit on-site for the disposal of decontaminated waste by-products from the CDTF. See discussion in response to Heartwood comment number 13 (G-Hea.13). The RCP Alternative does however include an analysis of the potential environmental impacts associated with the construction and use of a thermal treatment unit at the CDTF. MDNR performed the air dispersion modeling for the CDTF thermal treatment unit, and used established methods and protocols consistent with air permitting in their review prior to granting the current air quality permit. The conclusions are presented in Table 5.7.
5	G-MCE.17	The USFWS Biological Opinion (BO) has been incorporated in the EIS. The BO finds the proposed action will not jeopardize the continued existence of the bald eagle, Indiana bat, and gray bat.
6	G-MCE.18	The use of smoke grenades and smoke pots is not included in the current air permit issued for fog oil training. Smoke grenades will not be used in conjunction with fog oil training. However, the Army intends to pursue, through a revised permit with MDNR, the use of smoke pots in association with fog oil training. All training will be conducted in strict compliance with permits that apply at the time training occurs. The Army's Proposed Action relating to this issue has been clarified in subsection 3.3.3.7. Particulate emissions have been determined for smoke pots, and used to support additional fog oil modeling which is summarized in subsection 5.2.2.3.7, and documented in the Air Quality Technical Reference Document. Particulate emissions have also been determined for smoke grenades (which will be used within FLW boundaries), to support the cumulative air quality dispersion modeling which is summarized in subsection 5.5, and further documented in the Air Quality Technical Reference Document. Because particulate is the primary concern, it has been conservatively estimated that grenade and smoke pot emissions are 100% particulate.
7	G-MCE.19	See the response to US Department of Interior comment number 1 (F-FWS.01).

1	G-MCE.20	Volume IV was prepared during the very early stages of the DEIS preparation as required to formulate alternatives for implementing BRAC training actions at FLW. At the time that Volume IV was written, the referenced studies (including the Human Health Preliminary Risk Assessment [PRE] and the Biological Assessment [BO]) were not completed. However, these documents were completed and used as the basis for conclusions in the DEIS. These supporting documents (and others as listed in EIS subsection 1.5) were located in each of the public repositories, and available for review along with the DEIS.
2	G-MCE.21	See the response to Environmental Protection Agency comment number 5 (F-USEPA.05) concerning air quality issues involving the use of HC smoke pots, colored dye smoke grenades, and colored smokes. Subsection 1.4.6.5 addresses the question of the future use of graphite at FLW. As stated in that subsection, analysis of graphite use will be evaluated at some future date when sufficient information is available to support such an analysis. The Army does not intend to use brass as an obscurant at FLW. See the response to Ozark Chapter, Sierra Club comment number 11 (G-OCSC.11) for additional information.
3	G-MCE.22	Phosphorous based smoke grenades will not be used. Particulate emissions for other smoke grenades (including dye colored smoke) and smoke pots have been determined and included in the cumulative air modeling in subsection 5.5 of the FEIS. Since particulate is the pollutant of primary concern, it has been conservatively estimated that grenade and smoke pot emissions are 100% particulate.
4	G-MCE.23	The Army does not intend to use brass as an obscurant at FLW. See the response to the Missouri Coalition for the Environment comment number 21 (G-MCE.21).
5	G-MCE.24	Subsection 1.4.6.5 addresses the question of the future use of graphite at FLW. As stated in that subsection, analysis of graphite use will be evaluated in association with other activities conducted at FLW to ensure consideration of the cumulative impact of all related actions. See the responses to Environmental Protection Agency comment number 5 (F-USEPA.05), Ozark Chapter Sierra Club comment number 11 (G-OCSC.11), and Missouri Coalition for the Environment comment number 21 (G-MCE.21) for additional information regarding this topic.

1	G-MCE.25	Millimeter wave obscurants are similar to graphite powder obscurants. As discussed in subsection 1.4.6.5 of the EIS, analysis of graphite use will be evaluated in association with other activities conducted at FLW to ensure consideration of the cumulative impact of all related actions when additional information concerning the training requirements and intent are available. See the response to the Environmental Protection Agency comment number 5 (F-USEPA.05) and Missouri Clition for the Environment comment number 21 (G-MCE.21) for additional discussion.
2	G-MCE.26	Mobile emissions are addressed in subsection 5.4.2.3.2. Since mobile sources do not require an air permit, they were qualitatively addressed in subsection 5.2.2.3 specific to use during training. Dispersion modeling has been performed for the cumulative analysis for particulate, the pollutant of most concern. Air sources in the model as well as background concentrations were coordinated with MDNR and USEPA. Exhaust emissions from the fog oil generators have been determined and incorporated into the fog oil modeling, although exhaust emissions are typically not a significant source of particulate emissions. In addition, unpaved road emissions during training have been determined and included in the cumulative analysis. Subsection 5.5 has been modified to include the additional analysis and results of the cumulative air quality impacts. VOCs can't be modeled, but FLW will be monitoring ozone as part of an overall air monitoring plan. In addition, particulate (10 microns or less) will be monitored.
3	G-MCE.27	Subsection 3.3.3.7 provides a discussion of the amount of fog oil to be used under the three training alternatives. Subsection 5.5 describes mitigation actions (including reduced use of fog oil) as required to implement the Army's Proposed fog oil training alternative (OPTM) consistent with the current air permit and associated training restrictions. The Army will not exceed the current permit limits unless they are able to apply for a permit and obtain approval to use additional quantities of fog oil at a future date. The Military Police School and Chemical School were actively involved in the development of the EIS and the mitigative measures contained in subsection 5.5. The BRAC legislation which directed the relocation of the Military Police School and Chemical School did not include a requirement for the relocation of reserve component chemical units which utilize FMC training areas, nor does it direct that they mobilize at FLW after the Chemical School relocates. These deploying chemical reserve units are not expected to utilize FLW for training. Under the reuse plan for FMC, a Reserve enclave will be established and maintained on the installation, and many of the training areas will continue to be available for use by reserve units.

1	G-MCE.27 (cont.)	However, there are seven Reserve Chemical Training Battalions whose mission it is to training individuals in basic and advanced individual chemical skills. These units do not deploy, and personnel from these units will augment or replace Chemical School personnel upon mobilization. During peacetime these units conduct training for individuals similar to the training conducted by the Chemical School. These units are expected to use FLW as this training requires access to the CDTF and use of the Chemical School's equipment. The amount of fog oil used by these seven battalions for training chemical corps students has been included in the annual usage requirements discussed in EIS subsection 3.3.3.7.
2	G-MCE.28	During the fog oil air permit review, combustion of unleaded gasoline in the pulse-jet engine was evaluated and emissions determined. FLW plans to use a generator which uses diesel fuel. The emissions from diesel fuel combustion have been calculated and included in the FEIS. Subsection 5.2.2.3.7 has been modified to include these emissions. The installation will be required to submit an application to MDNR to pursue a modified permit to use diesel fuel.
3	G-MCE.29	An initial screening of the alternative training methods was completed to eliminate non-viable training methods from further consideration as discussed in subsection 3.2.1 and subsection IV.7.3 of Volume IV. Training methods were eliminated during the initial screening if they failed to provide a minimum level of training proficiency or would result in unnecessary safety risks for students, staff or members of the surrounding civilian community. Identification of training methods which were not capable of providing the required minimum level of skill development was accomplished by a team of military and civilian trainers representing the Chemical, Engineer, and Military Police schools. Identification of training methods that would result in unnecessary safety concerns was accomplished by representatives of the FLW Safety Office. Additional details are provided in Volume IV of the EIS.
4	G-MCE.30	The Army has made numerous commitments in the EIS which will allow training to be accomplished in accordance with Federal and state regulations. The DEIS explained ongoing studies that could result in the ability to conduct fog oil training at levels higher than allowed in the existing fog oil training air permit; but clearly states that all training will comply with permits that are in place at the time training occurs. The cumulative impacts analysis of air quality included in subsection 5.5 of this FEIS has been modified in response to comments received from the Missouri Department of Natural Resources and the US Environmental Protection Agency. This analysis demonstrates total air quality impacts, and commits to mitigation actions associated with the Army's Proposed Action for fog oil training that will allow this training activity to proceed in accordance with applicable laws and regulations.
5	G-MCE.31	See response to Missouri Coalition for the Environment comment number 1 (G-MCE.01).
6	G-MCE.32	Subsection 3.3.3.8.1 of the EIS describes how radiation safety training is conducted under each of the three training alternatives. As stated under the OPTM (Army's Proposed) and EPTM alternatives, training with unsealed radiological isotopes will be strictly limited to an indoor/laboratory environment.

1	G-MCE.33	See response to comment number G-OCSC.18 regarding additional text that has been added to document the permit appeal. The RCP Alternative, as described in the EIS, is consistent with fog oil amounts that are currently being used at Fort McClellan. The rationale for the formulation of the OPTM Alternative is fully documented in subsection 3.3.3.7 and Volume IV of the EIS. Subsection 3.3.3.7 also explains the difference between the amount of fog oil allowed in the current air quality permit, versus the amount specified in the OPTM Alternative. Beyond helping to define the RCP Alternative, the training conducted at FMC is irrelevant to training to be conducted at FLW. If the commentor's rational was followed training would be degraded and greater harm would be caused to the environment.
2	G-MCE.34	As discussed in subsection 3.2.1 and subsection IV.7.3 of Volume IV, the selection of the Environmentally Preferred Training Method (EPTM) and Optimum Training Method (OPTM) (which included a review of the amount of fog oil that was required) was completed in January 1996 by a study team that included representatives of the: • US Army Military Police School and the US Army Chemical School (including training program development specialists) • US Army Engineer Center and Fort Leonard Wood (including environmental and training program development specialists), • Harland Bartholomew & Associates, Inc. • Parsons Engineering Science, Inc. and • 3/D Environmental, Inc. The analysis, which is document in Tables IV.1 and IV.2 (of Volume IV) included a review of each element of planned fog oil training (static, mobile and field operations) and multiple training method alternatives to meet the objectives of each of these elements. Subsection 5.5 has been modified to document steps that will be taken to ensure that the OPTM Alternative is mitigated to ensure that training complies with all applicable laws and regulations.

1	G-MCE.35	Subsection 3.3.3.7 clearly defines the proposed quantities of fog oil that would be used under each of the training implementation alternatives (RCP, OPTM and EPTM alternatives). The subsection points out that the RCP Alternative and the OPTM Alternative would exceed current permit limits for yearly and daily emissions, and that the EPTM Alternative would exceed the daily limit. The subsection goes on to state that FLW will adhere to all permit conditions in effect at the time training occurs, and that FLW would be required to justify a modification of the permit in order to train at the identified level. Subsection 5.2.2.3.7 which discuss air emissions from fog oil training provides a similar discussion, and indicates that failure to remain with established PM10 limits could result in significant adverse impacts.
2	G-MCE.36	Since the OPTM results in a long-term adverse impact, the Army will mitigate by training with the current air permit which has federally enforceable permit conditions. This permit allows the Army to use 65,000 gallons per year and 3700 pounds (approx. 481 gallons) per day of fog oil. Table 5.52 has been updated to reflect this. Training effectiveness is addressed in EPA comment 33 (F-USEPA.33).
3	G-MCE.37	See the response to Environmental Protection Agency comment number 31 (F-USEPA.31).
4	G-MCE.38	Dispersion modeling has been performed to support a modified air quality cumulative impact analysis. Air emission sources used in the cumulative model (including unpaved road emissions associated with driver training and fog oil training) as well as background concentrations were coordinated with MDNR and USEPA. Subsection 5.5 has been modified to document the analysis process and results of the cumulative air quality impacts. Subsections 5.5.3.3 and 5.5.4.3 have been modified to discuss the implications of these actions on future growth in the region.
5	G-MCE.39	See response to Missouri Coalition for the Environment comment number 36 (G-MCE.36).
6	G-MCE.40	The Army does not assume that a revised permit will be granted. The EIS clearly states in numerous locations that the Army will train within the limits of the existing permit until such time that a revised permit application is prepared, submitted and approved. Subsection 5.5 has been modified to reflect this.

G-MCE.41	As pointed out in the FEIS at subsections ES.7 and 5.5.12, FLW intends to fully comply with provisions of the fog oil training permit, including NAAQS. As discussed below, the NAAQS for PM10 are set much lower than fog oil concentrations that are considered safe. The OSHA and ACGIH workplace health standard for mineral oil mist in the air is 5000 $\mu g/m^3$ (5 mg/m^3). This standard is supported by the preliminary risk evaluation (PRE) conducted for fog oil and because the mineral oils used in industry are compositionally similar to fog oil, it is also considered an appropriate health standard for fog oil. Based on safe mineral oil exposure concentrations established by OSHA and ACGIH for the workplace, the 24 hour NAAQS for PM10 of 150 $\mu g/m^3$ can be exceed by 33 times and still not cause a health effect. Because the NAAQS for PM10 is 33 times lower than the safe, long-term exposure concentration established for industrial mineral oils and fog oil, no health consequences would be anticipated if NAAQS were occasionally exceeded up to 5000 $\mu g/m^3$ (5 mg/m^3). Subsection 5.2.2.15.B.1 addresses fog oil concentrations anticipated at the FLW boundary and at the edge of the FLW cantonment area. Anticipated exposure concentrations, including the infrequent potential for exposure to the general public are determined to be safe.
G-MCE.42	The iron oxide, titaniun, and zirconium are part of the fuze and the quantities are very small (milligram quantity range). Some can be converted to ash, but the ash primarily stays in the grenade therefore not much escapes. It should not be toxic in these quantities. It will not result in VOCs since they are not organic carbons. The material fate is it will be ash/solid waste. The portions of the smoke grenade which results in air emissions are the pyrotechnic portion and dye/smoke portion. The pyrotechnic portion is ignited or burned, therefore it has been conservatively estimated that combustion emissions are 100% carbon monoxide. The dye/smoke portion has been conservatively estimated that emissions are 100% particulate as discussed in response to Missouri Coalition for the Environment comment numbers 18 (G-MCE.18) and 22 (G-MCE.22). Information on the inhalation toxicity of the different type of smokes (i.e., other than fog oil) has been added to the human health discussion of smoke pots, smoke grenades and illumination rounds in Sections 5.2.2.15.B.2 and B.2.12.1.

G-MCE.43	The air quality analysis has been modified. The emissions from smoke grenades and smoke pots have been calculated. Smoke grenades are not used in conjunction with fog oil training although under the training methods analyzed the Army would like to use smoke pots in conjunction with fog oil training. All three fog oil alternatives (including the smoke pots and unpaved road emissions) have been modeled. In addition, FLW plans to use fog oil generators which will burn diesel fuel, not gasoline as described in the original permit. A permit modification will be sought for use of diesel fuel and for using smoke pots during fog oil training. The emissions from the burning of diesel fuel have been determined and included in the model. For the cumulative analysis, additional modeling which included FFE training has been conducted and ambient air impacts determined. The air quality analysis included in the FEIS has been coordinated with both USEPA and MDNR. Subsections 5.2.2.3.7 and 5.5 have been modified to document the results of the additional modeling.
G-MCE.44	See response to Environmental Protection Agency comment number 31 (F-USEPA.31).
G-MCE.45	FLW will comply with all air regulatory requirements, including conditions established in the fog oil air permit, which are designed to maintain NAAQS. See response to Environmental Protection Agency comment number 4 (F-USEPA.04). The air quality cumulative impacts analysis in subsection 5.5 has been modified and coordinated with both MDNR and USEPA.
G-MCE.46	The Army believes that the information presented in the DEIS, and related support documents that were available at the public hearing open house and in each of 9 public repositories, was sufficient to present the proposed action, associated alternatives, and the impact of these alternatives for public comment. All comments received during the 45-day DEIS comment period have been addressed in this FEIS, which will be available for public review for a 30-day period. All comments received after the close of the DEIS, as well as any that are received on the FEIS will be provided to the decision-maker, and considered in the preparation of the Record of Decision. Also, see response to Heartwood comment number 1 (G-Hea.01).

Ozark Chapter/Sierra Club
(G-OCSC)

Ozark Chapter / Sierra Club

November 25, 1996

Please reply to:
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COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE RELOCATION OF U.S. ARMY CHEMICAL SCHOOL AND U.S. ARMY MILITARY POLICE SCHOOL TO FORT LEONARD WOOD, MISSOURI

The Ozark Chapter Sierra Club opposes the relocation of the U.S. Army Chemical School to Fort Leonard Wood, Missouri based upon the significant negative environmental impacts the relocation will cause. We also oppose its continued operation at Fort McClellan, Alabama due to the continuing negative environmental impacts. We take no position on the relocation of the U.S. Army Military Police School to Fort Leonard Wood, Missouri. We realize that this stance is outside the scope of the Draft Environmental Impact Statement due to the mandate established by the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510). Therefore, for the remainder of our comments we will address specific issues within the Draft Environmental Impact Statement (DEIS).

INTRODUCTION

The Ozark Chapter Sierra Club, is concerned about the environmental health of the Fort Leonard Wood area because it is one of the most unique areas in the United States. As part of the Ozarks, it is one of the oldest geological areas in the world. The area has one of the highest biological diversities of any place in the world, with many unique and endemic species, many of them rare or endangered. The area has more caves than any other part of Missouri, the Cave State. It also has many unusual springs, sinkholes, and bluffs, a result of its karst topography. The area has many types of rare habitats such as glades, seeps, and forest types. The Big Piney River and its tributaries is one of the highest quality streams in the Midwest in terms of scenery, water quality, and biological diversity. It is also considered one of the best float streams

and fishing streams in Missouri. The area abounds in scenic beauty, pure air quality, and great recreational opportunities.

Because of these unique and irreplaceable features, it is important for the nation to ensure the these unspoiled treasures are passed on to the next generation unharmed. The best way to avoid harming the scenic and biological diversity of the area is to decrease or eliminate, not increase the amounts of toxic chemicals in the area and to stop all habitat destruction.

PUBLIC PARTICIPATION

Denial of Extension Request

The Ozark Chapter Sierra Club requested an extension of the comment period for an additional 45 days on November 7, 1996. This extension request was made to allow the Ozark Chapter Sierra Club and the public to complete our review of the DEIS and prepare substantive comments on the document. This request was made because the Ozark Chapter Sierra Club is a volunteer based organization, with only one full-time employee in the State of Missouri. While our experts have attempted to review the DEIS, they have worked on a volunteer basis in addition to their regular employment. Because of the length of this document, they have not been able to complete their review within the 45 day comment period.

In a letter dated November 18, 1996 from U.S. Army Lieutenant Colonel Timothy J. Baker, the Ozark Chapter Sierra Club's request for an extension was denied. The letter cites the BRAC EIS Teams efforts "... to keep the public, including the Sierra Club, informed throughout the EIS process." However, we have encountered significant difficulty in receiving requested documents from members of the BRAC EIS Team in a timely manner, even after having been promised them. Specific problems include: 1

- One of our members specifically requested all volumes of the DEIS for review. They were only sent Volume I and II, with the note that the additional volumes must be viewed at a repository.

- We requested two additional copies of Volume III and IV of the DEIS at the November 6, 1996 meeting, and were told they would be sent via Federal Express the next day. We called when they had not been received by November 13th, a full week later, and were finally provided the volumes at the November 14th open house and hearing.

- At the open house on November 14th, we were promised all supplemental

documents to the DEIS without charge, although we were also told generally there was a charge of $543. We were told we would receive them by November 19th. When they had not arrived by November 20th, we again called, and were told that we would not receive them after all, but should view them at a repository. We then contacted the offices of U.S. Representative Karen McCarthy, U.S. Representative Ike Skelton, and U.S. Representative Dick Gephardt. Later that day, we were notified we would receive some of the requested documents, which we did the next day. We contacted U.S. Representative Dick Gephardt's office again to intercede so we could obtain the rest of the supplemental documents. Soon after this call we were contacted by the U.S. Army Corps of Engineers and told the rest of the documents would be shipped and we would receive them November 22nd. On November 22nd, we did receive additional supplemental documents, however some supplemental documents incorporated by reference into the DEIS have still not been provided. The Ozark Chapter Sierra Club will submit a Freedom of Information Act (FOIA) request for these additional supplemental documents and other reference documents in a request outside our comments on the DEIS. Unfortunately, this delaying process has left us only one business day to review the documents which have been received and provide comments before the comment period ended.

1 cont.

Because of the delays in receiving documents and the failure of the U.S. Army to extend the comment period, we have been unable to complete our review of the DEIS. **While this document reflects many of our concerns, we reserve the opportunity to provide additional comments in the future when we have been able to complete our review after all requested documents have been provided.** We expect any supplemental comments we submit will be fully considered prior to the completion of the Final Environmental Impact Statement (FEIS).

2

GENERAL DEIS COMMENTS

Analysis of Scoping Comments

In reading the DEIS and supplemental documents, we find many questions raised by the Ozark Chapter Sierra Club during scoping have not been addressed. In some instances, our concerns receive no mention in the DEIS or supplemental documents, other than the printing of our scoping letter. In other cases, our concerns are noted, however no attempt is made in the DEIS or supplemental documents to address the concerns. A particularly egregious example of this is the inclusion of a list of species of concern for the state of Missouri, with no attempt to address potential effects on these species. **A mere list of species is not an assessment of the environmental impacts that these species may face.**

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Failure to address scoping comments in the DEIS means that neither the Ozark Chapter Sierra Club, nor the public will be able to assess if responses are adequate to protect human health and the environment until the FEIS. The purpose of providing a draft Environmental Impact Statement is to insure the public has the opportunity to review and comment on all data and information before the FEIS is produced. Unfortunately, without the opportunity to review and comment now, if responses are inadequate in the FEIS, judicial redress may be the only recourse allowed.

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Selection of Alternatives

Throughout the DEIS and supplemental documents, the U.S. Army's Proposed Training Action has been the Optimum Training Method (OPTM) Alternative. While an Environmentally Preferred Training Method (EPTM) Alternative has been considered, it has not been selected in the DEIS as the Proposed Action. **The Ozark Chapter Sierra Club urges the adoption of the Environmentally Preferred Training Method (EPTM) Alternative in all cases, unless an even more stringent alternative is necessary to protect the environment and the public health.**

4

Federal and State Agency Review

We are concerned by reports from federal agency personnel that agencies have been ordered to sign off on the DEIS process and not raise issues that would provide obstacles to the process or delay it. Federal agency review of this DEIS and others is an important part of the process. If agencies have been limited in their response, either by direct order or by implication, then the process is fatally flawed, and needs to be restarted at the scoping phase. We view these reports that the federal review process has been prejudiced with grave concern.

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State agencies have likewise been directed from Governor Mel Carnahan's office, either directly or implicitly, to support the relocation of the schools to Fort Leonard Wood. Given this, they have also been unable to fully participate in the review process and raise the concerns they might otherwise. Unfortunately, the U.S. Army has no way to correct this flaw. The citizens of Missouri will suffer the direct environmental and human health impacts that result from this from this shortsighted promotion of questionable development at the expense of all else.

6

Matrix Format of the DEIS

We note that the general format of the DEIS, with its incomprehensibly designed matrices of training alternatives, supporting facility alternatives and population

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relocation alternatives, appears to have the general goal of confusing the public, obfuscating the issues, and obscuring the true nature of the DEIS. The Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (NEPA) clearly state:

> Environmental impact statements shall be written in plain language and may use appropriate graphics so that decisionmakers and the public can readily understand them. Agencies should employ writers of clear prose or editors to write, review, or edit statements, which will be based upon the analysis and supporting data from the natural and social sciences and the environmental design arts.
>
> (Section 1502.8)

7 cont.

While Public Law 101-510 does exempt this DEIS from some provisions of NEPA, it is our understanding that the basic tenet of providing a document in plain language still remains. Unfortunately, the DEIS presented for comment does not meet this requirement. While we realize the complex nature of some of the issues may require technical explanations at times, the matrices process only serves to confuse the readers and the general public. While we have no way of knowing the number of comments that will be received, we suspect that very few will be able to do more that generally support or oppose the proposal. Few indeed will address the issues raised in the DEIS because of its incomprehensible approach.

FOG OIL

The Ozark Chapter Sierra Club notes with concern that the U.S. Army has changed its estimates of the total amount of fog oil to be used from the 65,000 gallons per year that was estimated at the time of scoping and for the U.S. Army's application of relevant air permits from the Missouri Department of Natural Resources. The U.S. Army now estimates the amount of fog oil to be 85,000 gallons per year under the proposed alternative. This means, as noted in the DEIS, that the U.S. Army must apply to have the current air permit modified to reflect the new estimate of fog oil usage. With the chemical analysis of the fog oil now available in the documents associated with this DEIS, the Ozark Chapter Sierra Club will oppose any modifications to the air permit, unless they serve to make the conditions more stringent. The Ozark Chapter Sierra Club may, in addition, seek to have the existing air permit revoked based upon the chemical analysis of the fog oil.

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The Ozark Chapter Sierra Club's concerns with the fog oil stem from the study in Appendix B, *Fog Oil Sampling and Analysis: U.S. Army Corps of Engineers Fort Leonard Wood, Missouri* of the *Final Report: Evaluation of Human Health Risks*

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Associated with Fog Oil Training at Fort Leonard Wood, Missouri: Preliminary Risk Evaluation Report. This testing was performed by Bateille in December, 1995 at the Aberdeen Proving Grounds in Maryland.

- The emphasis and concern of this study was on human health which is a very real concern. But to assess environmental concerns, sediment, water and organisms should have been collected. Nonetheless, by scientific standards, this was a poorly designed and conducted study. Specific flaws with the design include:

- The study was only conducted for three days in December. This does not represent a scientifically valid sampling of the range of conditions present at the site.

- Only one test per fog oil type was conducted.

- Only one or 2 samples of oil from each generator test were collected. Statistically, 3 samples from each generator would have been preferable.

- Only duplicate (2) samples were collected at each air sampling station. Statistically, 3 samples per sampling station would have been preferable.

- Only one reference (control) QC sample was collected per generator. Again, 3 would have been preferable.

- The air sampling stations were not well positioned, and indeed, it was necessary to shift the stations during sampling.

    - The air sample sites were changed during the test (Test 1, moved from 300 meters (m) to 200 meters).

    - The 2 tests had only one air sampling station that was the same (11 m) (Test 1 = 11 m, 25 m, 200-300 m, Test 2 = <1 m, 11 m, 100 m), therefore it is impossible to quantitatively compare results (see Section 2.2).

        1. Each air sample station and, in many cases, each duplicate air sampling time was different. In order to make comparisons, air sampling times should have been the same for all air sampling stations for each test (see Table 8).

        2. There were many problems with the air samplers (See Section 3.1).

            A. The 25 m air samplers of Test 1 did not run the same length

of time (21 minutes and 5 minutes).

B. The < 1 m air samplers of Test 2 only worked for several minutes until it became clogged with oil.

C. The 25 m air samplers of Test 2 did not work, so no samples were collected.

- Because of the problems with conducting the oil and air sampling as indicated above, scientifically this study should have been considered a pilot or range finding study only.

- To get more scientifically accurate data the study should have collected triplicate (3) samples of oil, control air, and air samples. In addition, soil, water and plant materials, and other organisms from the area should have been collected. Polycyclic aromatic hydrocarbon (PAH) data from air sampling stations beyond 200 meters would also be helpful to look at air dilution effects.

Apart from study design, it is possible to obtain some results from the study, although additional sampling and data collection would be necessary to confirm these results. To summarize our interpretation of the results:

10 cont.

- Priority Pollutant PAH's were detected in both the fog oils and the fog oil smoke above background (control air) levels (See Table 1). It is possible that the fog generators could be generating some of the PAH's form the fog oil hydrocarbons.

- There was no dilution effect on the PAH levels out to 200 meters. In fact, the data shows an increase in the Priority Pollutant PAH's with distance.

- The PAH levels in the fog oil smoke is low, and would not be considered a significant threat to human or environmental heath with just one exposure. The concern is that multiple exposures of the fog oil and smoke to humans and the environment would be expected to have a chronic effect on some organisms.

- Based upon Battelle research, 85,000 gallons of the fog oil would have about 76,000 milligrams or 76 grams of carcinogenic Priority Pollutant PAH's. This is a significant amount to expose to humans and the environment.

Factors Contributing to Higher Levels of PAH's in Fog Smoke

- Different sources of fog oil, other than the ones tested will have very different

chemical (PAH) makeup. Also, the SGF-2 fog oil will have different chemical makeup, depending on its source. Therefore, unless each source of fog oil is tested for PAH's, the PAH levels emitted to the environment will remain unknown. 10 CO

- Will there ever be additives to the fog oil such as graphite? Additives would significantly alter the chemical makeup. Graphite in particular would increase emissions. An Environmental Assessment (EA) would need to be conducted for any fog oil changes. The Ozark Chapter Sierra Club hereby requests that they be notified of any EA's or EIS's conducted relating to the U.S. Army Chemical School at Fort Leonard Wood, Missouri. 11

- Will used oil ever be used? Used oil is higher in PAH's than new oil. 12

PAH Dispersion in the Environment

PAH's are subject to dispersion in the environment. Data on the effects of PAH's to organisms are contained in U.S. Fish and Wildlife Service. *Polycyclic Aromatic Hydrocarbon Hazards to Fish, Wildlife, and Invertebrates: A Synoptic Review.* Biological Report 85(1.11), 1987. The results are summarized here:

- The source of PAH's in the environment in order of abundance: petroleum spills, waste water, urban surface runoff, and biosynthesis.

- Background levels of PAH concentrations in air are higher in the winter than in the summer, due to emissions from household heating.

- After entering the air, PAH's become quickly associated with particles in the air and soil. 13

- PAH's are considered stable once they become associated with air particulates and can be transported over long distances.

- *Long Range Transport of Polycyclic Aromatic Hydrocarbons* by Alf Bjorseth and Bjorn Sortland Olufsen, and *PAH in Water, Biota and Sediments*, by Borneff and Kuntee in *Handbook of Polycyclic Aromatic Hydrocarbons*, 1983, provide the following: PAH's can be transported long distances by air. This is the reason the PAH's are distributed in sediments throughout the world. All of the PAH's in air are associated with the particles in the air. Air particles are usually of two sizes: < 1 micron and greater than 10 microns. If a PAH attaches to a < 1 micron particle and the particle is released at height of 20 m above sea level with a 4-5

m/sec wind it would travel 1000 to 1500 km before it settled to the surface. Under certain meteorological conditions, PAH's may be transported over long distances, apparently with no or very low degradation or dilution. Depending on the size of particles, PAH's are deposited on land and water surfaces in a few days or weeks, or are washed down by rain and snow. Finally, rainwater may contain large amounts of PAH's.

- PAH are most reactive several days to 6 weeks after release.
- Most of the PAH's released to the air will not degrade, but end up in the soil or aquatic environments.
- PAH's degrade more slowly in the soil and aquatic environments than in the atmosphere, providing more time for bioaccumulation.
- Aerosols are a major source of PAH compounds in water. PAH's in water first accumulate on the surface micro layer where PAH concentrations may be 10^6 times more concentrated than in the air. Then, most of the PAH's are absorbed onto suspended solids which end up in the sediments or in organisms.

13 cont.

Chronic Effects of PAH's

- PAH's cause a wide variety of adverse biological effects on survival, growth, metabolism, and tumor formation. Inter- and intra-species responses to carcinogenic PAH's were quite variable, and were significantly modified by many other chemicals in the environment.
- PAH's at low levels in the environment can cause chronic effects in organisms.
- Plants and animals can rapidly bioconcentrate significant concentrations of PAH's from low concentrations in the air, soil, or water. Uptake rates are highest in plants, algae, mollusks, and aquatic invertebrates, possibly due to inefficient or missing mixed-function oxidase systems which are incapable of PAH metabolization.
- PAH's can accumulate in plant tissue. PAH's effects on plants area largely unknown.
- Effects on herbivores when eating PAH contaminated plants is unknown.
- Plants grown in PAH polluted atmospheres can have 100 times more PAH's than

plants in rural areas.

- Mosses appear to be good indicators of regional or local PAH air pollution.

- Smaller atmospheric particles containing PAH's are easily inhaled and may pose special unknown problems for airborne organisms such as birds, insects, and bats.

- *Bioavailability of benzo[a]pyrene associated with diesel particulate* by David Bevan and David Ruggio in *Polynuclear Aromatic Hydrocarbons Measurements, Means, and Metabolisms*, 1991, further reveals that one source of PAH's in particulates is incomplete combustion of diesel fuel. There is a concern about increasing the use of diesel fuel because diesel fuel emits a much greater volume of particulates than gasoline. Exposure to diesel soot with PAH's represents a serious health risk. Their research indicated that BaP was biologically available from diesel particulates. About 20% of the PAH's loosely associated with the particles are rapidly absorbed into the lungs of mice. 80% of the PAH's were tightly associated with the particulates and were absorbed more slowly. Only about 50% of the PAH remained in the particulates in the lungs after 3 days. Compounds from the diesel particles affected lung DNA of the mice.

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- Fish and amphibians collected in areas with high PAH levels in the sediment have had tumors.

- Researchers (Boyle et al. 1984, 1985; Finger et al. 1985) have studied fluorene effects in fresh water (dosed ponds with 120 μg/L to 2,000 μg/L). They found that the time to depurate or biotransform 50% of accumulated PAH's (Tb 1/2) for aquatic organisms ranged from 6 to 11 days. Ten weeks after fluorene introduction, little degradation had occurred in the organic bottom sediments. Fluorene residues were present in fish, invertebrates, and rooted plants. Studies with fingerling bluegills showed that 62 μg/L of fluorene adversely affected their ability to catch prey. 120 μg/L fluorene reduced growth, and 1,000 μg/L increased their vulnerability to predation by largemouth bass. The authors concluded that fluorene concentrations well below its solubility in water and at levels that could occur in the environment represent a potential hazard to aquatic organisms.

- PAH's are most toxic to crustaceans, of all tested animals.

- Bivalve mollusks tend to accumulate high PAH levels due to their inability to

metabolize and excrete them. Tumors can occur in mollusks with high levels of PAH's.

- In view of the carcinogenic characteristics of many PAH compounds, their increasing concentrations in the environment should be considered alarming, and efforts should be made to reduce or eliminate them wherever possible. The additional emissions caused by the obscurant training are in direct opposition to these effects.

The accumulation of low levels of PAH's in the environment cause chronic (long term) toxicity to living organisms and not acute (rapid) toxicity. PAH's may affect organisms by affecting their health and changing their behavior, or decreasing their growth, reproductive success, their ability to obtain food, or changes in the genetic code that produces mutations or tumors. Because of this, we will not see massive short term change in the environment after release of PAH's, but changes that take a longer time to be noticed. Over time, the biological populations of the area will start to deteriorate and some of the more sensitive organisms will disappear, which could in turn affect still other organisms. The biological diversity of the area will suffer. 13 cont.

The best way to avoid harming the biological diversity of an area is to eliminate or decrease the amounts of toxic chemicals in the area and to stop any habitat destruction in the area. Spraying fog oil obscurant with PAH's and other toxic chemicals over a wide area of the Big Piney River and Roubidoux Creek drainages will have the effect of harming the biological diversity of this unique area.

SEALED FACILITY - LIVE AGENTS

Most of our concerns regarding the sealed facility have related to the disposal of any hazardous wastes generated, as it appears as if the precautions taken at such facilities have been sufficient to prevent hazards associated directly with the use of live agents. 14

However, there are still concerns associated with the disposal of wastes created in the facilities. During the environmental permitting process leading up to the BRAC decision, the U.S. Army had proposed to incinerate the wastes in a "thermal treatment unit" contained within the facility. We objected to incineration in such a unit, insisting that the type and volume of waste to be incinerated required a fully-regulated RCRA hazardous waste incinerator.

Now, the proposed alternative is to ship the wastes off-site, from Fort Leonard Wood to an undisclosed disposal site, and utilizing undisclosed disposal methods. We have been told verbally that the U.S. Army has a procedure in place for handling hazardous wastes, and that the wastes generated at the sealed facility would be 15

handled in this routine fashion.

We have several questions in this regard that have not previously been asked, since until the release of the DEIS we were under the impression that incineration *in situ* would occur. Those questions are:

- Have wastes from live agent facilities been handled through this process at other military installations?
- If so, what were the methods of disposal? What were the results?
- It has been pointed out that not all of the waste materials will be incinerated--what will the methods of disposal be?
- Apparently some wastes will be incinerated--what facilities will be utilized for this incineration? (The Ozark Chapter Sierra Club is adamantly opposed to incineration in anything less than a full RCRA -approved Hazardous Waste Incinerator - no incinerator operating under BIF rules would be acceptable).
- Previously we were told that incineration on-site, within the sealed facility was the only fail-safe method of dealing with the hazardous waste generated--what is the likelihood that materials contaminated with unneutralized live agents would leave the facility?
- What was the rationale for the change? Has this been tested?
- Why is there no discussion of the disposal of the specific and potential hazardous wastes that will likely be generated by the live agent/sealed facility in the DEIS?

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The last question gets to the center of our concerns. Various tables and matrices in the DEIS give somewhat confusing information on the "Routinely Generated Hazardous Waste" and "Infrequently Generated Hazardous Waste" at Fort Leonard Wood. All of the discussion relates to storage; there is no discussion of disposal. Given the rather serious nature of the compounds used in the sealed facility, and the previous policy of "nothing comes out except humans" relating to the sealed facility, the somewhat cavalier discussion in the DEIS is alarming.

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It is not enough to simply state that the hazardous wastes generated will be handled through the routine "Installation Hazardous Waste Management Plan". These are not routine wastes. The public concern about the use of Sarin and who-knows-what-else chemical warfare agents must be allayed. If fail-safe measures are not in place to ensure that the public is not exposed to hazardous--possible lethal--wastes, we must oppose the use of off-site disposal.

All hazardous waste disposal contracted by the U.S. Army must utilize the "Best Available Technology" (BAT). It is not sufficient to contract with a hazardous waste hauler for the most cost effective legal disposal method. The U.S. Army must place restrictions in the hazardous waste contracts which limit the disposal methods to the BAT. **Disposal of hazardous waste in cement kilns is not acceptable at any time.** If hazardous waste disposal methods are not discussed in the FEIS, then an EA must be conducted prior to awarding any contracts for hazardous waste disposal. This EA would specify the BAT, and be subject to public review and comment. The Ozark Chapter Sierra Club hereby requests to be notified of any EA's or EIS's conducted which concern hazardous waste disposal.

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This entire matter of hazardous waste disposal seems to have been poorly thought out--certainly the information contained in the DEIS gives no indication that any carefully conceived and researched plan is in place. Simple shipping of this material off-post to be dealt with in some undescribed manner does not represent any assurance of protection of the public health and safety. While there are situations in which the "out of sight - out of mind" mentality are appropriate, we do not believe that disposal of hazardous wastes generated in associated with lethal chemical warfare agents is one of those situations.

Much more study, research, and documentation must be devoted to this issue.

APPLICABLE LAWS AND PERMITS

PSD Air Quality Permit

During the public comment procedures pertaining to the PSD permit related to the fog oil obscurant, we calculated that the number of training days x the amount of fog oil needed to conduct such training would far exceed the 65000 gallons specified in the permit application. Our calculations were ignored by the MoDNR's Air Pollution Control Program and by the Missouri Air Conservation Commission.

It is interesting to note that the U.S. Army has now indicated that 87,000 gallons per year is the minimal amount needed. It should be further noted that the U.S. Army had indicated to the DEIS study team that 127,000 gallons would be needed, but this was scaled back.

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At the time of the Air Permit application procedures, it was our suspicion that the information supplied in this and other permits (the construction permit for the Thermal Treatment Unit for the Sealed Facility, as one example) had been carefully manipulated in order to obtain the permits in an expeditious manner. We stated those suspicions to the permitting bodies and were roundly ignored. Those suspicions are now confirmed.

The information on the amount of fog oil to be used was speculative at best, and fraudulent at worst.

There is a curious statement in the DEIS Executive Summary, ES.7, pertaining to the amount of fog oil permitted: "If the Army cannot obtain a permit to use 84,500 gallons, the Army will conduct training using the 65,000 gallons currently permitted (MDNR Permit No. 0695-010)." This seems to be a rather casual assumption that training will be cut back to accommodate this restriction--yet there is an aversion to adopting the EPTM alternative which would greatly reduce the overall impacts of the fog oil, without any apparent results in the quality of training.

There are two conflicting assumptions which may be drawn from this: 1) The Army fully expects the MoDNR Air Pollution Control Program and the Missouri Air Conservation Commission to roll over on their backs at the behest of the Governor's Office and grant a modification to the permit; or 2) the training can be conducted using much less impactive methods and techniques than the preferred alternative. Neither scenario is very complimentary to the governmental agencies involved.

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All the above notwithstanding, however, the current status is that the U.S. Army does not have a valid Air Permit to use fog oil obscurant since the Eastern District of Missouri, Federal Court, set aside the Opacity Variance issued by the Air Conservation Commission in a suit brought by the Coalition for the Environment. Until this issue is resolved the U.S. Army cannot utilize fog oil obscurants that create opacity of more than 20%.

Section 404 of the Clean Water Act

There is a statement that the U.S. Army will obtain a NationWide Permit (NWP) to conduct activities that impact waters of the United States. It should be noted that NWPs can only be obtained for activities or projects that will cause MINIMAL OR NO IMPACT, according to carefully prescribed criteria by the U.S. Army Corps of Engineers after receiving certification by the MoDNR Water Pollution Control Program that such activities or projects are in accordance with the requirements of Section 401 (Water Quality) of the Clean Water Act.

Given the proclivity of the U.S. Army to adjust information to secure the desired outcome, we will view with great skepticism any attempts to conduct activities or projects impacting the waters of the United States under a NationWide Permit. This would hold particularly true for NWP 26 - isolated wetlands or headwaters, as this NWP has been much abused by governmental agencies.

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NPDES Permit

This permit was also issued on the basis of 65,000 gallons of fog oil usage. Since that is no longer the amount to be used, this permit is no longer valid and must be modified by the Clean Water Commission, with full public notice, comment, review, and hearings. Any modifications are also subject to administrative appeal and judicial review. 20

The Executive Summary - ES.7 makes a reference that the water permits are further discussed in the DEIS at 5.2.2.10.2, but there is no mention of the NPDES permit for fog oil training in this section. The DEIS must discuss the possibility that the permit will not be modified to accommodate the addition of 20,000 gallons per year, and how that will affect the training. This may require considerable modification to major portions of the DEIS.

HUMAN HEALTH RISKS

We concur with the apparent conclusions of the *Final Report on Evaluation of Human Health Risks Associated with Fog Oil Training at Fort Leonard Wood, Preliminary Risk Evaluation Report* (Final Report) that there will be no acute or immediate health problems associated with the use of fog oil. However, we are not comfortable with the lack of information relating to health problems associated with long-term or chronic exposure. 21

One of the questionable premises is that exposure will not occur outside of the specific areas of training for reasons as stated in the Final Report (pg 3). We are not convinced that the oily fog will not drift into populated areas downwind of Fort Leonard Wood--particularly the village of Big Piney, the areas along the Big Piney River to the east and southeast of Fort Leonard Wood, and the main barracks area of the installation. 22

The number of days on which training is to occur will necessitate using fog oil on occasions where climatic conditions are less than ideal. While the best of intentions may be represented in the DEIS, in the real world decisions are based on a number of factors. Some of those factors may indicate that in order to meet training goals it will be necessary to push certain limits. Therefore, to deal with real-world scenarios, the health assessment should have considered what the long-term exposure to fog oil will mean to the health of those who could be downwind on many occasions. 23

However, rather than assess what could happen, the team assigned to this task chose to deny reality and deal with ideal hypotheses. Computer and laboratory simulations cannot duplicate what happens "out there": wind speed and directions

change abruptly, commanding officers are under pressure to crank out the troops, atmospheric conditions are not always conducive to ideal volatilization rates, and people wander into places where they are not supposed to be.

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Any reasonable person could assume that prolonged breathing of droplets of oil is not conducive to good health. In other supplemental documents, it is revealed that the chemical composition of the oils used for fogging is not consistent--and that different oils are used depending on availability. So, added to the simple ill-effects of breathing petroleum products, is the likelihood of breathing even more hazardous compounds: benzene, heavy metals, and butadiene to name just a few of the components of some types of oils utilized.

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To demonstrate what can happen in the real world, one need look no further than the in-field testing reported on in Appendix B of the Final Report. In the Section entitled 3.0 Results and Discussion, a number of errors are reported as occurring in collecting samples during an actual fog oil testing at Aberdeen Proving Grounds , including the need to move the monitors around rapidly due to changing wind direction, one of the sampling failed to collect for the specified duration due to "high particulate loading" (i.e. it got clogged up with fog oil), and there was difficulty in obtaining samples because of either human error or mechanical failures.

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Yet, with all of these problems in what should have been carefully controlled conditions, the Final Report purports to state conclusions that fog oil is not harmful to human health. It is our contention that the tests prove almost nothing (except that shit happens), because the wrong premises were used, the tests were flawed, and no long-term, real-life studies have been conducted. Until the latter occurs, NO CONCLUSIONS CAN BE REACHED REGARDING THE LONG-TERM CHRONIC IMPACTS OF FOG OIL ON HUMAN HEALTH.

To state otherwise is just poor science.

THREATENED AND ENDANGERED SPECIES

Indiana Bat

The Indiana bat (*Myotis sodalis)*, was federally listed as endangered by the U.S. Fish and Wildlife Service in 1967. Because of the potential harm done by the relocation of the U.S. Army Chemical School, it is the opinion of the Ozark Chapter Sierra Club that the U.S. Fish and Wildlife Service **must** issue a Biological Opinion that the preferred alternative will result in jeopardy to the continued survival and recovery of the Indiana bat. We believe the jeopardy opinion must be issued because of the effects of the fog oil and terephthalic acid (TPA) on the Indiana bat and its prey species.

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Bioaccumulation of PAH's in Indiana bat tissue is of paramount concern. It is unfortunate that the U.S. Fish and Wildlife Service Biological Opinion is not available for review with this DEIS, as this would facilitate an understanding of the effects of the preferred alternative on this species. Since it is not, we must reserve many of our comments on the Biological Opinion itself to after its release. We ask that the Ozark Chapter Sierra Club be provided a copy of the Biological Opinion for review as soon as it is available so we may submit supplemental comments. We expect any supplemental comments we submit will be fully considered prior to the completion of the FEIS. Nonetheless, we have attempted to address our concerns that the harm the preferred alternative may cause to the Indiana bat based upon the DEIS, the *Biological Assessment: Relocation of U.S. Army Chemical School and U.S. Army Military Police School to Fort Leonard Wood, Missouri* (BA), and its appendixes. 27

The BA, in its analysis of Indiana bat exposure to fog oil, states "...there is potential for exposure nearly installation-wide when Indiana bats forage or roost during spring staging, during the summer maternity season, and during fall swarming. Indiana bats in hibernacula also have potential for exposure." (BA, pg 47). We concur with the findings of the BA that acute toxicological effects are unlikely. However, based upon our analysis of the PAH's released by the generation of the obscurant, we believe that chronic toxicological effects to the Indiana bat due to inhalation are likely, as is confirmed in Appendix IV of the BA (pg 187). These effects will be most extreme in Indiana bat summer maternity areas and roosting sites directly exposed during obscurant training, but Indiana bats will also be exposed during foraging in the area, spring staging, fall swarming, and in winter hibernacula. These effects must result in the U.S. Fish and Wildlife Service issuing a Biological Opinion that the preferred alternative will result in jeopardy to the continued survival and recovery of the Indiana bat. 28

Additional effects will be incurred by the consumption of prey species that may be contaminated by PAH's. PAH's do bioaccumulate, and levels can be expected to increase in Indiana bats as prey species are consumed which have been exposed. **The DEIS, the BA, and all supplemental documents fail to adequately assess the impacts of consumption of prey species contaminated by PAH's. This assessment must be part of the U.S. Fish and Wildlife Service's Biological Opinion and the FEIS.** A full analysis of the risks associated with PAH's are summarized in this comment letter under the section entitled "Fog Oil." 29

We note with grave concern the BA, in Appendix IV (pp 194-5), finds TPA will have acute and chronic affects on the Indiana bat. This is of particular concern as the exposure period calculated was only 2.5 minutes, based on the expected burn time of each grenade. Obviously, the smoke resulting from TPA grenades and smoke pots remains in the area longer than the burn time of the grenade or smoke pot, and therefore the exposure time must be increased significantly. Again, these effects must 30

result in the U.S. Fish and Wildlife Service issuing a Biological Opinion that the preferred alternative will result in jeopardy to the continued survival and recovery of the Indiana bat.

The only possible way of mitigation some of the effects of the fog oil would be to not allow obscurant training when Indiana bats are in hibernacula or using summer roosts and maternity areas. We recognize, however, that this would limit the obscurant training to only a few weeks in spring and fall. Nonetheless, the hibernacula are of critical concern, and consideration should be given to not allowing obscurant training in areas where they could be affected during the months of September to April. 31

Gray Bat

The gray bat (*Myotis griscens)*, was federally listed as endangered by the U.S. Fish and Wildlife Service in 1973. Because of the potential harm done by the relocation of the U.S. Army Chemical School, it is the opinion of the Ozark Chapter Sierra Club that the U.S. Fish and Wildlife Service **must** issue a Biological Opinion that the preferred alternative will result in jeopardy to the continued survival and recovery of the gray bat. We believe the jeopardy opinion must be issued because of the effects of the fog oil and TPA on the gray bat and its prey species. Bioaccumulation of PAH's in gray bat tissue is of paramount concern. It is unfortunate that the U.S. Fish and Wildlife Service Biological Opinion is not available for review with this DEIS, as this would facilitate an understanding of the effects of the preferred alternative on this species. Since it is not, we must reserve many of our comments on the Biological Opinion itself to after its release. We ask that the Ozark Chapter Sierra Club be provided a copy of the Biological Opinion for review as soon as it is available so we may submit supplemental comments. We expect any supplemental comments we submit will be fully considered prior to the completion of the FEIS. Nonetheless, we have attempted to address our concerns that the harm the preferred alternative may cause to the gray bat based upon the DEIS, the BA, and its appendixes. 32 33

The BA, in its analysis of gray bat exposure to fog oil, states "...there is potential for exposure nearly installation-wide when gray bats forage. Gray bats may also be exposed to stressors in maternity caves." (BA, pg 86). We concur with the findings of the BA that acute toxicological effects are unlikely. However, based upon our analysis of the PAH's released by the generation of the obscurant, we believe that chronic toxicological effects to the gray bat due to inhalation are likely, as is confirmed in Appendix IV of the BA (pp 192-3). These effects will occur both during foraging and in maternity caves. These effects must result in the U.S. Fish and Wildlife Service issuing a Biological Opinion that the preferred alternative will result in jeopardy to the continued survival and recovery of the gay bat. 34

Additional effects will be incurred by the consumption of prey species that may be contaminated by PAH's. PAH's do bioaccumulate, and levels can be expected to increase in gray bats as prey species are consumed which have been exposed. **The DEIS, the BA, and all supplemental documents fail to adequately assess the impacts of consumption of prey species contaminated by PAH's. This assessment must be part of the U.S. Fish and Wildlife Service's Biological Opinion and the FEIS.** A full analysis of the risks associated with PAH's are summarized in this comment letter under the section entitled "Fog Oil." 35

We note with grave concern the BA, in Appendix IV (pg 201), finds TPA will have acute and chronic affects on the gray bat. This is of particular concern as the exposure period calculated was only 2.5 minutes, based on the expected burn time of each grenade. Obviously, the smoke resulting from TPA grenades and smoke pots remains in the area longer than the burn time of the grenade or smoke pot, and therefore the exposure time must be increased significantly. Again, these effects must result in the U.S. Fish and Wildlife Service issuing a Biological Opinion that the preferred alternative will result in jeopardy to the continued survival and recovery of the gray bat. 36

The only possible way of mitigation some of the effects of the fog oil would be to not allow obscurant training when gray bats are in not in caves. Their use of caves year-round makes this impossible, however. Consideration should be given to not allowing obscurant training in the areas of the maternity caves during the months of April to August. 37

Bald Eagle

Until reading the BA, the Ozark Chapter Sierra Club did not believe that the bald eagle (*Haliaeetus leucocephalus*) would face significate impacts from the proposed relocation. However, upon reading the BA of nesting locations and winter surveys of bald eagle use of the Big Piney River and Roubidoux Creek, we have a new consciousness of the threats the bald eagle may face. Downlisted to a threatened species in Missouri by the U.S. Fish and Wildlife Service, the bald eagle does nest in three locations near Fort Leonard Wood and roosts in winter on the installation.

It is evident that winter roosts of bald eagles along the Big Piney River and Roubidoux Creek may be adversely affected. In light of this, it is disturbing that in 1996, the U.S. Army chose not to conduct an aerial winter survey as it has done annually since 1976. This lapse calls into question the U.S. Army's commitment to the biological monitoring program that is detailed in the DEIS and supplemental documents. 38

We do not concur with the Appendix IV of the BA (pg 194) that no acute or chronic inhalation, ingestion, or dermal absorption effects were determined for foraging, 39

perching, or nesting bald eagles. Instead, we submit that foraging or perching bald eagles may indeed face chronic inhalation effects from PAH's. In addition, nesting bald eagles may, over the course of time, be affected by bioaccumulation of PAH's from their prey species. This is compounded by bald eagles' nesting site fidelity over many years, and the slow accumulation of PAH's in their bodies from what may be low concentrations in their prey. 39 cor

We are further concerned that TPA inhalation will have acute effects on foraging and perching bald eagles (BA Appendix IV, pg 201). These effects may result in the U.S. Fish and Wildlife Service issuing a Biological Opinion that the preferred alternative will result in jeopardy to the continued survival and recovery of the bald eagle. 40

Finally, as the population of the bald eagle continues to increase in Missouri, nests sites have increased dramatically. The DEIS and supplemental documents fail to address the potential for the bald eagle to use an area in Fort Leonard Wood as a nest site. The FEIS and the Biological Opinion must include an assessment of the possibility of nesting occurring on Fort Leonard Wood, and the potential impacts of all preferred alternative actions on this potential nesting site. 41

Running Buffalo Clover

Running buffalo clover (*Trifolium stoloniferum*) is a federally endangered species. Its range includes Laclede and Texas counties, and may possibly include Pulaski county, and therefore it may be present on Fort Leonard Wood. Running buffalo clover is not addressed in the DEIS or supplemental documents, nor are surveys to determine the potential occurrence of running buffalo cover discussed. The Ozark Chapter Sierra Club scoping comments specifically ask, "What will the effects be on federally Threatened or Endangered species?" This concern has not been addressed in the DEIS. 42

The Ozark Chapter Sierra Club believes a wide range of training activities may affect running buffalo clover. This must be addressed in the Biological Opinion and the FEIS if it occurs on Fort Leonard Wood..

Federal Candidate Species

We note with grave concern that no evaluation has been conducted of the environmental impact training activities will have on federal candidate species. Indeed, the only mention that candidate species occur at Fort Leonard Wood is buried in Volume III of the DEIS, Appendix F, where candidate species of fish are notated with asterisks. No other mention is made that other federal candidate species may occur at 4:

Fort Leonard Wood. **This is not an adequate analysis of the environmental impacts on federal candidate species associated with the relocation of the U.S. Army Chemical School to Fort Leonard Wood.** The Ozark Chapter Sierra Club scoping comments specifically query impacts on the following species (please refer to those scoping comments for specific questions which must be addressed):

- Spectacle case (*Cumberlanida monodonta*)
- Central Missouri cave amphipod (*Allocrangonyx hubrichti*)
- Bluestripe darter (*Percina cymototaenia*)

Additional research has determined these additional species may occur on or near Fort Leonard Wood and be impacted by the relocation: **43 cont.**

- Plains topminnow (*Fundulus sciadicus*)
- Lake cress (*Armoracia lacustris*)
- Reed bent grass (*Calamagrostis porteri* spp *insperata*)
- Bald grass (*Sporobolus ozarkanus*)
- Ozark spiderwort (*Tradescantia ozarkana*)

Because of the lack of analysis in the DEIS and supporting documents, we can only assume that these species are all present and will be harmed by the proposed action. If this is not correct, a supplement to the DEIS or BA must be provided delineating the status of these species on or near Fort Leonard Wood and the impacts the preferred alternative will have. The Biological Opinion should also analyze the impacts to each of these species.

It should be noted the DEIS included the supplemental document *Ecological Risk Assessment: Effect of Fog Oil Obscurant on Selected Amphibians, Reptiles, and Birds at Fort Leonard Wood, Missouri*. This document is woefully inadequate for any biological review, as will be addressed in the following sections. **44**

OTHER BIOLOGICAL RESOURCES

State Listed Species

The Ozark Chapter Sierra Club in scoping comments specifically requested

information of the effects on Missouri rare, endangered or watch list species as listed by the Missouri Department of Conservation. The U.S. Army has chosen to ignore this question in the DEIS. In addition to the federal candidate species listed above, we queried the impacts on the following (please refer to those scoping comments for specific questions which must be addressed):

- Salem cave crayfish (*Cambarus hubrichti*)
- Blacknose shiner (*Notripis heterolepia*)
- Black bear (*Ursus americanus*)

Additional research has again revealed other species which may occur on or near Fort Leonard Wood and which must also be addressed (their Missouri status is in parentheses):

- Cooper's hawk (*Accipiter cooperii*) (Rare)
- Sharp-shinned hawk (*Accipiter striatus*) (Rare) 4!
- Big-leaved aster (*Aster macrophyllus*) (Endangered)
- American barberry (*Berberis canadensis*) (Rare)
- Bristly sedge (*Carex comosa*) (Rare)
- A sedge (*Carex fissa* var *fissa*) (Status undetermined)
- A sedge (*Carex nigromarginata* var *nigromargi*) (Endangered)
- Triangular sedge (*Carex triangularis*) (Endangered)
- Brown creeper (*Certhia americana*) (Status undetermined)
- Marsh wren (*Cistothorus palustrus*) (Status undetermined)
- No common name (*Dicranella rufescens*) (Status undetermined)
- Goldie's fern (*Dryopteris goldiana*) (Rare)
- Sharp-scaled manna grass (*Glyceria acutiflora*) (Rare)
- Four-toed salamander (*Hemidactylius scutatum*) (Rare)

- Little leaved alum root (*Heuchera parviflora* var *parviflora*) (Endangered)
- Loesel's Twayblade (*Liparis loeselii*) (Endangered)
- Green adder's mouth (*Malaxis unifolia*) (Status undetermined)
- Celestial lily (*Nemastylis nuttallii*) (Status undetermined)
- Ozark shiner (*Notropis ozarcanus*) (Status undetermined)
- Slender pondweed (*Potamogenton pusillus* var *pusillus*) (Endangered)
- Shaggy moss (*Rhytidiadelphus triquetrus*) (Rare)
- Golden glade-moss (*Rhytidium rogosum*) (Endangered)
- Oval ladies' tresses (*Spiranthes ovalis* var *erostellata*) (Rare)
- Buffalo clover (*Trifolium reflexum*) (Status undetermined)
- Barren strawberry (*Wadsteinia fragarioides* spp *fragar*) (Rare)
- White camas (*Zigadenus elegans*) (Rare)

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Because of the lack of analysis in the DEIS and supporting documents, we can only assume that these species are all present and will be harmed by the proposed action. If this is not correct, a supplement to the DEIS or BA must be provided delineating the status of these species on or near Fort Leonard Wood and the impacts the preferred alternative will have.

It should be noted the DEIS included the supplemental document *Ecological Risk Assessment: Effect of Fog Oil Obscurant on Selected Amphibians, Reptiles, and Birds at Fort Leonard Wood, Missouri*. This document is woefully inadequate for any biological review, as will be addressed in the next section.

Accipiters

The Ozark Chapter Sierra Club raised concerns about the impacts of the relocation on accipiters. This also was not addressed in the DEIS or supplemental documents, although raptors did receive brief mention as occurring at Fort Leonard Wood. The Cooper's hawk and sharp-shinned hawk are both listed as rare by the

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Missouri Department of Conservation. Both hawks are highly sensitive to disturbance at nest sites, and questions about disturbance of these sites were raised in our scoping comments. Additional questions were raised about bioaccumulation in these species and the affects the oil may have on fertility. These questions have been ignored in the DEIS and supplemental documents.

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Neotropical Migrant Bird Species

The Ozark Chapter Sierra Club also raised the question of impacts to neotropical migrant bird species. This question was also ignored, except to provide a list of neotropical migrant species. Additionally, no discussion of potential mortality or implications of the Migratory Bird Treaty Act were included. No discussion of the impacts on the habitat of neotropical migrant bird species is included in the DEIS or the supplemental documents, either.

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Ecological Risk Assessment

The DEIS includes the supplemental document *Ecological Risk Assessment: Effect of Fog Oil Obscurant on Selected Amphibians, Reptiles, and Birds at Fort Leonard Wood, Missouri.* This document arbitrarily chooses four species, apparently in an unstated attempt to pick representative indicator species, and conducts an environmental analysis of potential affects on these species. This is apparently an attempt to address all species not included in the analysis of effects on the Indiana bat, gray bat, and bald eagle. Unfortunately, these species are NOT representative of the range of species that must be studied for environmental impacts.

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The Ozark Chapter Sierra Club recognizes it is not possible to fully analyze for every species occurring at Fort Leonard Wood. However, we believe it IS necessary to analyze for each species of concern, including federal threatened and endangered species, federal candidate species, and Missouri watch list species. Even where data is limited, some mention of status and potential impacts must be included. Beyond that, additional analysis may only address taxonomic groups (i.e. mollusks, insects, etc.) or genus as time, space, and level of concern permits.

The Ozark Chapter Sierra Club notes with particular concern a number of which have not been included in the assessment, such as mollusks, which are filter feeders, and are noted as having high uptake rates for PAH's. Another group is arthropods, especially crustacea, again because they are highly susceptible to PAH's. Since insects are major prey organisms for Indiana and gray bats, they also must be address. Finally, fish are of major concern and should be a focus of a biological assessment, since aquatic organisms in general are highly susceptible to PAH's, and fish would be

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expected to bioaccumulate PAH concentrations and serve as a prey for bald eagles and other species.

Mitigation

Unfortunately, mitigation of the acute or chronic effects of PAH's, TPA, or other substances is not possible. It is unrealistic (and undesirable) to expect veterinary treatment for all populations of each species of organism that may suffer effects. Nor is it possible after each release of toxins to release new, uncontaminated prey species. Such a concept is again unrealistic and impossible. The preferred alternative will simply cause untold harm to the environment, and that impact can not be mitigated, let alone assessed, as the DEIS and supplemental documents have amply proved. Nor is the Environmentally Preferred Training Method much better. While lessening some impacts, the harm is still incalculable. All that remains it the creation of a new alternative that does not result in the release of fog oil, TPA, titanium dioxide, or other toxic emissions. Unfortunately, the DEIS has failed to include a reasonable evaluation of such an alternative. This is a fundamental flaw in the DEIS. 50

The only way to correct this flaw in this instance would be the creation of a supplemental DEIS for the purpose of fully evaluating other possible training alternatives. This would include the use of videos, computer simulated activities. the use of water vapor or non-toxic substances, and other options. This time, a full evaluation of these options would be included, and not just a cursory mention that these were concerns raised, before dismissing the concerns out of hand. 51

CUMULATIVE IMPACTS AND INDIRECT EFFECTS

In our written scoping comments, we asked: "What are the impacts on the environment which will result from the incremental impacts of the various components of the Chemical Defense Training Facility when added to other past, present, and reasonable foreseeable future actions regardless of what individual or agencies undertake such actions? Please address this with as much specificity as possible." (DEIS - Vol 3, Technical Appendices, A-43). 52

The Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act state:

1508.7. Cumulative Impact

"Cumulative impact" is the impact on the environment which results from the incremental impact of the action when added to other past,

> present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.
>
> 1508.8. Effects.
>
> "Effects" include:
>
> (a) Direct effects, which are caused by the action and occur at the same time and place.
>
> (b) Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.
>
> Effects and impacts as used in these regulations are synonymous. Effects includes ecological (such as the effects on natural resources and on the components, structure, and functioning or affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial.

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We have provided the language above, because it seems fairly clear that the preparers of the DEIS did not have the opportunity to read 40 CFR 1500-1508, and this will remove ignorance as an excuse for the language which appears in the Executive Summary, ES.6.4 Step 4:

> General public input provided during the scoping process, and contacts with Federal and state agencies, regional planning agencies and community officials did not identify any other major activities that are currently occurring or that are planned to occur in the FLW area in the foreseeable future. Therefore, the cumulative impact analysis in the EIS is structured to evaluate the impacts of all elements of the BRAC-related actions to occur at FLW...

In other words, the DEIS does not consider past activities, does not consider minor actions taken cumulatively, and apparently relies on local agencies through the

general scoping and public comment procedures to determine if any ongoing or planned actions are "major." Nowhere in the NEPA regulations is there any reference to limiting investigations of cumulative impacts to "major" activities This is a fatally flawed premise, which raises serious doubts about the entire DEIS: if it is assumed that there are no other past, current, or future activities in the Fort Leonard Wood area that impact on the environment (as outlined in the NEPA rules above), then the narrow focus of the studies was in serious error. However, an examination of the Cumulative Impacts section of the DEIS indeed reveals that only the direct cumulative impacts of the Chemical Defense Training Facility (CDTF) itself were considered (in a very superficial manner), and all other possible incremental impacts from other activities and project on and off Fort Leonard Wood were ignored.

Perhaps the DEIS teams asked the wrong questions of the agencies contacted--if any questions were asked at all about those agencies' activities and projects. Perhaps the team contacted the wrong persons at the agencies--if any persons were contacted at all about cumulative impacts. Perhaps the wrong agencies were contacted. It should be readily apparent to any reasonable person that there are past, present and future actions and activities in the FLW area that have a direct, indirect and cumulative impact on the environment--to state otherwise is to deny reality. Denial of reality does not bode well for a DEIS..

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It does not take a very hard look at the Fort Leonard Wood area to identify activities or actions--past, present and reasonably foreseeable--that could incrementally and cumulatively with the CDTF cause impacts to the human and natural environment.

To cite a few examples:

- Fort Leonard Wood is a military base, and the many operations from firing ranges to artillery practice to grenade ranges to engineering training to the use of tanks and other heavy military vehicles (to name just a few) have clear and well-defined environmental impacts. What are the impacts of these and many other military training activities when added cumulatively and incrementally to the impacts of the CDTF? While it is understood why the DEIS team chose to ignore such cumulative impacts due to the difficulty in determining specific outcomes, THIS IS A BASIC REQUIREMENT OF NEPA and cannot simply be sloughed off.

- The U.S. Forest Service owns land adjacent, or in close proximity, to Fort Leonard Wood. Logging activities, road building, off-road vehicle use, and other activities in the Mark Twain have clear and well-defined impacts on the natural and human environment. Recently many studies have shown an alarming rate of decline in certain neotropical bird species and such decline has been directly tied to forest fragmentation and disturbance. What will be the impact of the CDTF in relation to the activities of the U.S. Forest Service--a federal agency?

None of this was examined in the DEIS--to ignore such activities in areas immediately to the south and west of Fort Leonard Wood is a violation of the requirements of NEPA. The DEIS must examine the both the direct and indirect impacts of the CDTF activities on the Mark Twain National Forest lands AND take into consideration the past, present and future activities of the U.S. Forest Service.

- There are many private (civilian) projects and activities around the boundaries of FLW that impact the natural and human environment: farming operations, logging, quarries, retail outlets, campgrounds, canoe outfitters, small manufacturers, and many others. Some of these may have minimal direct or indirect impact, others may have major impact, all have cumulative impacts when taken as a whole. The past and current activities and projects are easily determined and projections can be made about future activities; likewise with the impacts on the natural and human environment. The area to the east, southeast, west and southwest of FLW is heavily used by recreationists for canoeing, fishing, swimming, hunting, hiking, and foraging of foods (mushrooms, berries, nuts). The impacts of these activities must be considered cumulatively with the CDTF operations, and conversely, the impact **ON** these activities must likewise be determined.

- Federal, state, and county highways and roads traverse the area just outside the boundaries of Fort Leonard Wood. The direct and indirect environmental impacts of highways and roads are well documented--including forest fragmentation and wildlife kills, erosion, polluted runoff, wetlands destruction, and floodplain hydrology. The past and present highway and road projects--and the consequent impacts--are easily determined, and the federal, state and counties governments all have long range plans, including environmental assessment or EIS's. The impacts of these projects and activities must be considered cumulatively with the impacts of the CDTF.

- The CDTF operations are projected to bring many new residents to the Fort Leonard Wood area, both inside and outside the boundaries of Fort Leonard Wood. There are existing small communities around the outskirts of Fort Leonard Wood, particularly to the north and south, and these communities have experienced typical but significant problems with landfills, sewage treatment facilities, litter, debris, illegal dumping, and many other problems. An influx of population brings about many well-defined problems, from more asphalt and concrete causing stormwater runoff and polluted runoff to sewage treatment problems to impacts on indigenous flora and fauna through habitat destruction and disturbances. All of these problems will be complicated by the transient nature of the population and by the dramatic increase in population over a short period of time. All of this will cause significant and serious direct and indirect

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impacts to the human and natural environment. It is quite clear that these impacts must be considered when taken cumulatively with the direct and indirect effects of the CDTF. Yet the DEIS does not address these impacts in any significant manner.

The above examples represent only a cursory look at past, present and foreseeable future activities in the area around Fort Leonard Wood, but would present the DEIS team with starting points. Examinations of building permits, questioning area residents and business persons about their plans for the future, examination of county plans for landfills, roads, industrial developments, and discussions with U.S. Army officials about plans for other new activities or projects for Fort Leonard Wood are other suggestions.

Since the fog oil obscurant training will have the greatest impact on air quality, careful consideration must be given to other sources of emissions in the Fort Leonard Wood area: charcoal kilns, power plants, auto emissions, and current or potential industrial sources are all factors that must be considered. I-44 is a major thoroughfare for passenger and commercial vehicles; what are the plans of the Missouri Department of Transportation to upgrade this highway and subsequently increase the number of vehicles and auto emissions? Increase in residences will mean an increase in heating and cooling equipment--what percentage of current residences utilize wood-burning stoves and how will that increase and how does this relate to the use of fog oil as an air pollutant?

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The DEIS team may attempt to shrug off all the above as petty or insignificant, in which case we wish to let the NEPA regulations speak: "**Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.**" (40 CFR 1508.7)

We recognize that cumulative impacts are difficult to gauge or predict. However, denial that such impacts exist or will exist does not constitute an assessment. The FEIS must address cumulative and indirect impacts and effects in a meaningful way, and that meaningful way is outlined in the 40 CFR 1508.7 - 1508.8.

We renew our request stated originally in our scoping comments:

What are the impacts on the environment which will result from the incremental impacts of the Chemical Defense Training Facility when added to other past, present and reasonably foreseeable future actions regardless of what individual or agencies undertake such actions? Please address this with as much specificity as possible.

Again, denial does not constitute assessment.

CONCLUSION

The Ozark Chapter Sierra Club is appalled by the DEIS and its supporting documents. While in some cases, there has been a thorough review of the environmental impacts, in many cases our scoping comments have been ignored and no environmental impact analysis was conducted to address the issues raised. Even where a thorough review has occurred, the U.S. Army in its selection of a preferred alternative has ignored many options to limit the environmental impacts that are associated with the relocation. At this point in the environmental analysis of the proposed relocation of the U.S. Army Chemical School and the U.S. Army Military Police School to Fort Leonard Wood, Missouri, it may be necessary to begin the process again with scoping, due to the prejudiced federal review. Even if it is found unnecessary to begin over with scoping, it is still necessary to provide a supplemental DEIS or BA to address the various biological assessment questions for federal candidate species, Missouri state listed species, accipiters, neotropical migrant bird species, and the wide range of other species that may be affected, as well as a range of other alternatives which do not result in the release of fog oil, TPA, titanium dioxide, or other toxic emissions.

The Ozark Chapter Sierra Club thanks the U.S. Army and the U.S. Army Corps of Engineers for the opportunity to comment on this DEIS. We again reserve the opportunity to provide additional comments in the future when we have been able to complete our review. These supplemental comments will be submitted after the U.S. Fish and Wildlife Service completes their Biological Opinion and we have had the opportunity to review it, and after we have been able to complete our review of all the supplemental documents which we have requested in the accompanying FOIA request. We expect any supplemental comments we submit will be fully considered prior to the completion of the FEIS.

Sincerely,

M. Troy Gordon

cc Senator Christopher Bond
Senator John Ashcroft
Representative Dick Gephardt
Representative Ike Skelton
Representative Karen McCarthy
Representative Kenny Hulshof
Representative Mary Jo Emerson
Emily Brown, Fort Leonard Wood
Gary Frazier, U.S. Fish and Wildlife Service
Kathy Tortoricci, U.S. Environmental Protection Agency
Randy Moore, U.S. Forest Service
Governor Mel Carnahan
David Shorr, Missouri Department of Natural Resources
Jerry Conley, Missouri Department of Conservation

Priority Pollutant PAHs	Crude Oil	Test 1 Oil	Laboratory Blank Air	Field Blank Air	Test 1 Control Air	BACKGROUND (CONTROL) CORRECTED VALUES Test 1 11 m Air #1	Test 1 11 m Air #2	Test 1 25 m Air #1	Test 1 25 m Air #2	Test 1 200 + m Air #1	Test 1 200 + m Air #2
Napthalene	770	41	76	66	71				109	309	269
Acenaphtylene						0.6	0.6				
acenaphthene	14	4.8			5.5	1.2		0.7	8.5		18.5
fluorene	100	17	10		14	8	7	7	9		32
anthracene	14										
phenanthrene	290	89	47	0.32	60	60	29	50	100	130	160
fluoranthene	3.8	7			17				19		79
pyrene	11	14			4.6			14.4	22.4		27.4
benz[a]anthracene											
chrysene	22	48				43	29	39			
benzo[b]fluoranthene	6.7	6.7				8.1	27	4.9			
benzo[k]fluoranthene											
benzo[a]pyrene											
indeno[1,2,3-c,d]pyrene											
dibenz[a,h]pyrene											
benzo[g,h,i]perylene	3.5					1.6					
Total PAHS in Sample	16,000	14,000	270	140	280	13,740	10,740	14,740	17,740	7,440	6,240
Total PPAHs in Sample	1,235	228	133	66	172	123	93	116	268	439	586
PPAHs in 85,000 gallons (mg)	396,971	73,126									

Units = ng/g
PPAHs = Priority Pollutant PAHs
Air samples were backgrounded corrected by subtracting reported values from the PAH values in the Reference (control) air.

Polycyclic Aromatic Hydrocarbons in Fog Oil

Priority Pollutant PAHs	Test 2 Fog Oil	Test 2 Control Air	*BACKGROUND (CONTROL) CORRECTED VALUES* Test 2 1/2 m Air #1	Test 2 1/2 m Air #2	Test 2 11 m Air #1	Test 2 11 m Air #2	Test 2 100 m Air #1	Test 2 100 m Air #2
Napthalene	42	83	57	77	97	117	177	297
Acenaphtylene			45	43	41	41	33	43
acenaphthene	5.1	11	2	1	2	2	3	9
fluorene	18	14	52	41	38	40	30	44
anthracene			170	160	140	140	150	230
phenanthrene	98	61	109	99	79	79	89	169
fluoranthene	5.7	13	10	7	6	10	17	23
pyrene	18		48	39	29	26	25	35
benz[a]anthracene			9.6	25				50
chrysene	50		48	63	39	44		8.4
benzo[b]fluoranthene	8.3		7.6	7.9	6.7	5.5	5.9	
benzo[k]fluoranthene								
benzo[a]pyrene								
Indeno[1,2,3-c,d]pyrene								
dibenz[a,h]pyrene								
benzo[g,h,i]perylene								
Total PAHS in Sample	13,740	260	17,740	15,740	15,740	16,740	15,740	19,740
Total PPAHs in Sample	245	182	558	563	478	505	530	908
PPAHs in 85,000 gallons (mg)	78,784							

Units = ng/g
PPAHs = Priority Pollutant PAHs
Air samples were backgrounded c

G-OCSC.01	See response to Heartwood comment number 1 (G-Hea.01).
G-OCSC.02	See the response to Heartwood comment number 1 (G-Hea.01)
G-OCSC.03	A list of all scoping issues raised by the Ozark Chapter/Sierra Club, and the appropriate subsection in the EIS that addresses these scoping issues, has been added in Appendix A, Volume III. The referenced list of Sierra Club scoping issues has been marked to identify subsections of the EIS that have been modified in response to comments on the DEIS.
G-OCSC.04	Comment noted. The rationale leading to the selection of the Optimum Training Method (OPTM) as the Army's Preferred Action is provided in subsection 5.2.5, *Step 1 - Training Alternative Impact Analysis Summary*.
G-OCSC.05	The Army has no knowledge of, and cannot comment on the actions of other federal and state review agencies. It is pertinent to note that the Army made a significant good-faith effort to coordinate the FLW BRAC program with all key review agencies from the inception of the EIS process. As discussed in subsection 1.4.3, a total of eight Agency Coordination Workshops were held during the formulation of the DEIS. These workshops were designed to keep agency representatives informed of the direction and development of the EIS; and to solicit their input in the identification of key study issues, the formulation of EIS alternatives, and the development of impact analysis methods.
G-OCSC.06	See response to Ozark Chapter Sierra Club comment number G-OCSC.05.
G-OCSC.07	The format for alternative formulation was presented graphically at the public scoping meeting (equivalent to Figure 3.1 in the DEIS and FEIS), and EIS team representatives were available at the scoping meeting to discuss the proposed structure. No concerns were raised by the public relating to this proposed structure. This structure was also discussed at the first Special Interest Group Meeting (Sierra Club was represented), and no objections to it were identified. In addition, the alternatives structure was developed in association with all key review agencies (federal and state) during a series of workshops conducted as the DEIS was prepared. The complexity of the alternatives formulation process was driven, in large measure, by the extent of scoping comments received which requested full and detailed disclosure of the all aspects of the proposed action; and by requests to consider a full range of alternatives for each element of the action. The Army made a conscientious effort to include elements in the EIS to assist the reviewer in understanding the structure and content of the document. These elements included: 1) full disclosure of the alternative formulation process (as documented in Volume III and Volume IV); 2) the use of Figure 5.1 (Environmental Impact Analysis Process Summary) and matrix tables at the beginning of each major component of the impact analysis section to help orient the reviewer to the alternative being considered and the location of each impact analysis subsection; and 3) provision of graphic impact matrices in Volume II to provide an overview of training and facility construction impacts by alternative and to assist in the review of the narrative analyses provided in Volume I.

1	G-OCSC.08	As noted in subsection 3.3.3.7 (and others) the US Army will request renewal or modification of their existing air quality permit for the additional quantity of fog oil.
2	G-OCSC.09	Comment noted.
3	G-OCSC.10	See response to Environmental Protection Agency comment number 2 (F-USEPA.02). The purpose of the monitoring at Aberdeen Proving Ground was not to monitor fog oil in sediments, water and organisms. The FEIS study which addresses monitoring of sediments, water and organisms in an area where fog oil training has been conducted for over 10 years, is titled *Environmental Fate of Fog oil at Fort McClellan, Alabama* and is available for public review at any of the 11 repositories listed in Section 1 of the FEIS. The study at Aberdeen Proving Ground was designed to: 1) determine whether heat from the two generators to be used at Fort Leonard Wood for training altered the chemical composition of the fog oil during the production of obscurant smoke; 2) quantify chemicals of human health concern (includes carcinogens, polynuclear aromatic hydrocarbons [PAHs] and volatile organics) in fog oil smoke produced by the two types of generators, and to analyze for the same compounds in liquid fog oil; and 3) determine the concentrations of the chemicals of human health concern in smoke samples at different distances downwind of the generators such that results could be used to conduct a human health risk evaluation. The study design and the use of state-of-the-art sampling techniques and analytical methods resulted in the most in-depth chemical characterization of liquid fog oil and smoke conducted to date, and are sufficient to support related conclusions in the EIS. The quality and validity of data was not compromised by XAD-2 samplers running different lengths of time. Critical to the XAD sampling was collection of enough sample material for chemical analysis. It was not necessary to run each sampler the same length of time to collect an adequate amount of sample. The air pump automatically stopped when the XAD-2 column accumulated a high concentration of oil. The volume of air which had been pumped through the column was properly recorded. Oil trapped on the XAD-2 column at that time was more than adequate to allow an accurate analysis of the concentration of SVOCs and total oil in the air. Due to error of omission, SUMMA samples, for analysis of volatile organic compounds (VOCs), were not taken at the 25 meter station for Test 1 (not Test 2 as stated in the comment). The field study objectives were still achieved in the absence of VOC data at the 25 meter station in Test 1. The field data were of sufficient quality to properly assess health risks from fog oil generated by the M56 generator in Test 1 and the M157 generator in Test 2.

1 2	G-OCSC.10 (con't)	XAD-2 columns fixed with air pumps were used to collect samples for semivolatile (SVOC) analyses at the 100 meter and 200 meter stations. It is correct that XAD-2 samplers at the 100 and 200 meter distances were continuously moved to maintain their position within the obscurant cloud. Care was also taken while moving the samplers to maintain the 100 and 200 meter station distances. Had fixed stations been used instead of mobile stations, fog oil concentrations in the air at the 100 and 200 m distances would have been greatly underestimated. This is because the position of the fog oil cloud changes with greater magnitude as distance from the generator increases. Had fixed stations been used at the 100 and 200 meter distances, samplers would not have been in the fog oil cloud for much of the sampling period. The continuous movement of samplers to keep them positioned in the obscurant cloud assured that enough fog oil was collected for analysis. The SUMMA sampler used for volatile organic carbon (VOC) analysis is considered a grab sample and was only taken when the cloud of fog oil surrounded the sample location. This overall sampling strategy was biased toward measuring the highest concentrations of fog oil possible at the various downwind distances from the generators. The strategy provided quality data from which to calculate health risks for a range of different exposure concentrations. The objective of the sampling program was to determine concentrations of target VOCs, SVOCs, and saturated hydrocarbons (SHCs) in the smoke sampled at difference distances to insure a range of different concentrations was sampled. The sampling program was successful in achieving this objective. The analytical data were of sufficient quality to determine health risks for each exposure concentration measured in the field. One of the main objectives of the field sampling program was to produce a quality set of data which could be effectively used to evaluate health risk for each generator tested. This objective was achieved and was not dependent upon having the same alignment of stations for each test. For each generator tested, one reference (background) sample was taken with a SUMMA sampler for volatile organic carbon (VOC) analysis and one reference sample was taken with an XAD-2 column for semivolatile Organic carbon analysis (SVOC) analysis. Quality control was addressed by using one trip blank and one laboratory blank for each sampler (SUMMA and XAD) used in the sampling program. The reference samples were used to determine background concentrations of VOC and SVOC compounds in the ambient air before fog oil smoke generation/sampling was started. Reference samples are not QC samples. The limited number of compounds detected in QC samples and their very low concentrations did not indicate field or laboratory contamination was significant. Results of QC samples indicated quality data had been collected. Analytical results for background (reference) air demonstrated very low concentrations for a limited number of target compounds. This made it very easy to distinguish the presence and concentrations of fog oil compounds in the air from background levels.

1 2	G-OCSC.10 (con't)	The same fog oil (from the same 55 gallon drum) was used in each of the two generators used in Aberdeen Proving Ground study. Two samples of this oil were analyzed. Concentrations of each of the individual compounds in the semivolatile range, which includes the PAHs, were nearly identical when comparing the two oil samples, and confirmed that very limited sampling and analytical variability had occurred for the semivolatile compounds. Two samples of the same oil were analyzed for volatile organic compounds (VOCs). The VOC fraction contains low carbon number, volatile compounds such as benzene, toluene, xylenes, isobutane, etc. Results of the VOC analysis demonstrated higher variability than for the semivolatile analysis, but was still within an acceptable range. When inherent sampling and analytical variability is low, there is little justification for analyzing the oil three times. Within the first five minutes of Test 1 (the duration of fog oil generation for Test 1 was 25 minutes), the two XAD-2 samplers were moved from 300 meters to 200 meters because only small amounts of fog oil were visibly in the sampling area at the 300 meter distance. Had the sampling continued at the 300 meter distance, there was a concern that the continuous air sampler would not collect enough fog oil to allow analysis. The change of station distance did not affect the validity of the fog oil preliminary human health risk evaluation which was performed using analytical results from the field study. The analytical data were of sufficient quality to determine health risks for each exposure concentration of whole oil measured in the field. This important correlation is depicted in Figures 4 and 5 in the FEIS supporting report titled *Evaluation of Human Health Risks Associated with Fog Oil Training at Fort Leonard Wood, Missouri: Preliminary Risk Evaluation Report.* The report can be reviewed at any of the 11 libraries listed in Section I of the FEIS. The weather conditions at Aberdeen Proving Ground in Maryland, under which fog oil sampling was conducted, accounted for a broad spectrum of environmental conditions. The cold weather and no precipitation on both days of sampling would tend to favor higher measured concentrations, particularly at stations distant from the generators. Greater fog oil concentrations measured in samples will tend to result in a higher prediction of health risk which in turn will provide a more conservative (and protective) assessment. Cold temperatures will retard the volatilization rate of compounds in the obscurant cloud as it travels downwind from the generators. Precipitation, which did not occur at Aberdeen, has the potential to more rapidly reduce total fog oil concentrations in the air. For the reasons cited, the human health Preliminary Risk Assessment results account for a wide range of potential environmental conditions under which fog oil training will be conducted.

G-OCSC.10 (con't)	The variability of results of the semivolatile (includes the PAHs) analysis between the two sample replicates taken at each station was low and therefore considered representative of actual concentrations. The analytical results of concentrations of volatile organics compounds (VOCs) in the two air samples collected at each station were variable. VOC results would have benefited by collecting three samples so that a closer approximation of the actual mean could be calculated. The preliminary risk evaluation used the highest concentration of each compound analyzed at each station to assess human health risk. Calculating risk using the highest concentration of each compound found at a station was a strategy implemented to compensate for the variability found between the two samples collected at the same station and was done to err on the conservative side of health protection.
G-OCSC.11	As stated in subsection 1.4.6.5 the Army has expressed its desire to use graphite powder as an obscurant at some point in the future. The information as to implementation of the powder, however, is insufficiently developed to be included in the EIS. It is anticipated to take several years for the Chemical School to complete steps required to incorporate graphite into their training programs at FLW. When the required information is available, the Army will complete required environmental analysis concerning the use of graphite as an obscurant. As currently planned the graphite could be used alone or with fog oil. The Army's current plan is not to use additives when the temperature of the oil drops below 32 degrees fahrenheit, and the Army is committed to the air permit restrictions in effect when training begins. Two heated buildings will be constructed to keep fog oil warm so the viscosity is low enough to support training. A statement to this effect has been added to subsection 5.1.4.2 of the FEIS.
G-OCSC.12	Used oil will not be used for any aspect of the proposed fog oil training activities. Only fog oil that meets the current specification for smoke operations will be used.
G-OCSC.13	PAHs must be persistently present in the environment for long-term chronic impacts to occur. A field study conducted at Fort McClellan, in an area where fog oil training had occurred for over 10 consecutive years, revealed no evidence that PAHs from fog oil had bioaccumulated in plant or animal tissues, and were not detected in water, soils and sediments. This strongly supports a conclusion that long-term chronic effects of PAHs from fog oil training is not a significant environmental health issue because there is no evidence of chronic exposures. The Fort McClellan field study was conducted to support the FLW DEIS and is titled *Environmental Fate of Fog Oil at Fort McClellan, Alabama*. The document is available to the public for review at any of the 11 libraries listed in subsection 1.4.6.3 of the FEIS. Response to comment MDNR.56.10 discusses an environmental monitoring program which will be conducted to confirm these conclusions. Also see response to Ozark Chapter, Sierra Club comment number 29 (G-OCSC.29) for related discussions on PAHs.
G-OCSC.14	Comment noted.

1	G-OCSC.15	As noted in Volume III, Appendix I, alternative methods for disposal of the waste by-products of CDTF training were investigated as part of the review of alternatives developed as part of the EIS. These alternatives were developed (in part) in response to the numerous scoping comments provided by the public that expressed concerns about the treatment of the decontaminated waste by-products of training in a thermal treatment unit collocated with the CDTF. Disposal of the decontaminated waste by-products of training will be accomplished as discussed in subsection 5.2.2.8.5. Selection of the specific *Alternative Technologies* disposal method that will be used for the disposal of the decontaminated waste by-products (as discussed in subsection I.3.4) will be accomplished by the Army prior to the start of training (and periodically as required in the future). The Army's Proposed Action includes the use of off-site civilian contractors to treat and dispose of waste by-products. The contractors would be licensed and permitted to dispose of the wastes in accordance with Federal, state and local regulations. Selection of the final disposal method at this time is not in the best interest of the Army or the public as technologies, permitted disposal sites, and disposal regulations may change; and selection of a specific disposal process or site could preclude a fair and impartial process for selecting disposal contractors. See discussion in response to Heartwood comment number 13 (Ghea.13). As stated in subsection 5.2.2.2.8.5.2, all potentially contaminated solid wastes leaving the CDTF will be monitored for "off-gassing" of either GB or VX for a minimum of 48 hours prior to release from the CDTF. Consequently, solid materials contaminated with un-neutralized live agents will not leave the facility. Liquid wastes are tested and monitored as part of the decontamination process. As part of their standard operating procedures CDTF staff maintain a log of these test results. The tests monitor to ensure that detectable levels of either GB or VX do not exceed 20 ppb. Based upon independent test results of a sample taken from the CDTF at FMC, VX and GB levels were lower than the established standard of 20 ppb. Additional discussion of these test results have been included in subsection 5.2.2.8.5 and Volume III, Appendix I.
2	G-OCSC.	Subsection 5.2.2.8.5 of the EIS describes the types (classification) and quantities of waste by-products that are generated as a by-product of toxic agent training. The subsection includes a discussion of the special wastes, medical wastes and the hazardous wastes that will be generated as a result of this training. Subsection 4.8.1 has been modified to include additional information concerning the procedures currently used by FLW for the disposal of hazardous, medical and special wastes. The bulk of the hazardous waste listed in Tables 4.12 and 4.13 are associated with expired shelf-life items (as noted on the tables).

1 2	G-OCSC.16 (cont.)	Likewise subsections 5.2.2.8, 5.2.3.8 and 5.2.4.8 have been modified to discuss the disposal of BRAC related hazardous waste.
3	G-OCSC.17	See the response to Ozark Chapter, Sierra Club comment number 16 (G-OCSC.16).
4	G-OCSC.18	Subsection 5.2.2.3.7 has been modified to provide additional information concerning the status of the opacity issue.
5	G-OCSC.19	See the response to US Department of Interior comment number 1 (F-FWS.01).
6	G-OCSC.20	NPDES Permit No. MO-0117251 does not specify the quantity of fog oil usage. Effluent guidelines require monitoring for oil and grease, and total petroleum hydrocarbons on a quarterly basis. Current monitoring data from this permit has not shown an exceedence of the permit limits for oil and grease, and total petroleum hydrocarbons. It is anticipated that the quantities of oil and grease, and total petroleum hydrocarbons that will be present in surface water following the implementation of training activities associated with the US Army Military Police and Chemical Schools will not exceed the permit limits. However, continued water monitoring (see Vol. III, Appendix H and K) will verify this conclusion.
7	G-OCSC.21	See response to Environmental Protection Agency comment number 21 (F-USEPA.21).
8	G-OCSC.22	See response to the Environmental Protection Agency comment number 3 (F-USEPA.3).
9	G-OCSC.23	Computer models were used to conservatively predict the dispersion of fog oil smoke and were used to establish the permit conditions. The current permit restricts both the daily and annual quantity of fog oil use, and specifies that training may only be conducted under certain meteorological conditions, air stability classes, and wind directions depending on the training location. The dispersion model used for fog oil permit modeling is an MDNR and USEPA approved model. The model is used to predict a conservative ambient air impact for developing the permit and related training conditions. The permit also requires ambient air monitoring for both particulate and ozone to ensure all ambient air standards are being satisfied. A monitoring plan summary has been included in Vol. III, Appendix K to the FEIS. The air monitoring program will meet the fog oil permit requirements to conduct ambient air monitoring (pre- and post-training) for both particulate matter (10 microns or less) and ozone. Soil and vegetation monitoring will also be conducted. Inherent to the existing permit, MDNR can make adjustments to the permit based on the results of ambient air monitoring data.

1 2	G-OCSC.23 (cont.)	In addition to requirements of existing Range regulations (which are designed to allow for the safe operation of the ranges and training areas) Range personnel will be trained in the types of actions that they should be required to complete (including training of the fog oil spotters) in the proper methods to use to warn personnel that may venture near the obscurant cloud. Additionally, FLW will implement a Public Awareness Program as described in Vol. III, Appendix L designed to educate personnel in the surrounding civilian and military community of the potential hazards associated with training operations. Persons who venture into restricted training areas, including smoke training areas, will be trespassing and are subject to apprehension.
3	G-OCSC.24	See response to Environmental Protection Agency comment number 2 (F-USEPA.02).
4	G-OCSC.25	The testing at Aberdeen Proving Ground was done using state-of-the-art sampling and analytical methods. The chemical characterization of fog oil was more detailed than any other prior studies and was comparable in quality with the most sophisticated analysis found in the literature on any other petroleum product. The preliminary risk evaluation (PRE) followed USEPA guidance. It considered greater exposure times and frequencies than anticipated for soldiers involved for their entire military career in fog oil training. These exposure times, durations, frequencies and concentrations are much higher than the general population will receive. The PRE used USEPA toxicity values which are calculated to protect sensitive individuals of the population. In addition to the PRE analysis for assessing the potential for fog oil health effects, other toxicity studies were evaluated and included : 1) results of many toxicity tests conducted in the laboratory with mineral oils and fog oils (see literature review in Appendix E of the PRE); 2) mineral oil mist health standards for the work place; 3) case histories of worker exposures to mineral oil mists; 4) studies demonstrating the importance of severe treatment when mineral oils (such as fog oil) are processed to significantly reduce aromatics (including PAHs) so that the oil's toxicity is low and the oil does not exhibit evidence of dermal carcinogenicity. The toxicity investigations that were reviewed along with national and international exposure standards, the oil's chemical composition, and results of the PRE were considered when evaluating the health risk from exposure to fog oil. "Real-life" studies were among those considered for the health evaluation. As part of the fog oil training Air Permit, monitoring (as summarized in Appendix K of the FEIS, Vol III) will be conducted at FLW concurrent with fog oil training. We anticipate the monitoring will confirm safe levels in the cantonment areas and off-post. The Adaptive Management Strategy plan (contained in Appendix K in the FEIS, Vol. III) will be applied (if necessary) to mitigate any concerns identified during monitoring. Finally, the Public Awareness Program (contained in Appendix L in the FEIS, Vol. III) will be used to inform the public on issues of concern.

1	G-OCSC.25	As discussed in the response to Ozark Chapter, Sierra Club comment number 11 (G-OCSC.11) and Environmental Protection Agency comment number 27 (F-USEPA.27), the Army has committed to not using other additives in the fog oil when temperatures are low. A statement to this effect has been added to subsection 5.1.4.2 of the FEIS.
2	G-OCSC.26	The USFWS Biological Opinion finds the proposed action will not jeopardize the continued existence of the Indiana bat. In the BO the USFWS issued reasonable and prudent measure (RPM) to minimize take of listed species, and these RPMs are listed in subsection 5.1.4.3.
3	G-OCSC.27	See the response to Heartwood comment number 2 (G-Hea.02).
4	G-OCSC.28	Comment noted.
5	G-OCSC.29	Text to address this issue has been added to Sections 5.2.2.11.A .2 and 5.2.2.11.B.4 of the FEIS. Environmental fate factors such as type of PAH, input rate and concentration, the type of habitat (e.g., forested areas, grasslands, aquatic systems, etc.), and temperatures are major factors influencing degradation rates and bioaccumulation potential of PAHs. Sections 5.2.2.5.A.1, 5.2.2.11.D and 5.2.2.6 in Vol. I of the FEIS discuss the very low deposition rate of fog oil and also present data from field monitoring to indicate PAHs from fog oil training do not bioaccumulate in the environment. Section 5.2.2.15.B.1 presents literature citations to demonstrate the PAHs of the types found in fog oil do not biomagnify. Because there is no evidence that PAH biomagnification and bioaccumulation from fog oil training will occur, it follows that prey species will not have sufficient internal body burdens of PAHs to cause long term chronic effects on predators. The risk assessment conducted for Threatened and Endangered (T&E) species (results are found in Section 5.2.2.11.A.2 of Vol. I of the FEIS) concluded that no chronic ingestion toxicities are anticipated for OPTM and EPTM alternatives when T&E species consume prey with depositional amounts of fog oil. Based on results of an ecological risk assessment which evaluated potential fog oil acute and chronic toxicities to amphibians, reptile and bird species, no chronic ingestion toxicities were predicted. The study, *Ecological Risk Assessment Effects of Fog Oil Obscurant on Selected Amphibians, Reptiles, and Birds at Fort Leonard Wood, Missouri* is available for public review at any one of 11 libraries identified in Vol. I of the FEIS. The response to comment OCSC.13 provides further discussion on PAH's from fog oil training as related to chronic exposures to the environment.

G-OCSC.29 (cont.)	Factors such as type of PAH, input rate and concentration, solubility, an organisms ability to metabolize the PAH, route of exposure, and degradation rate in the environment have a major influence the potential for bioaccumulation of PAHs. These factors differ for each type of PAH and due to the great number of variables which determine the fate and effect of individual PAHs in the environment, it is not a given that PAH bioaccumulation will occur from an event such as fog oil training. Sections 5.2.2.5.A.1, 5.2.2.11.D and 5.2.2.6 in Vol. I of the FEIS discuss the very low deposition rate of fog oil and also present data from field monitoring to indicate PAHs from fog oil training do not bioaccumulate in the environment. Section 5.2.2.15.B.1 presents literature citations to demonstrate the PAHs of the types found in fog oil do not biomagnify. Because there is no evidence that PAH biomagnification and bioaccumulation from fog oil training will occur, it follows that prey species will not have sufficient internal body burdens of PAHs to cause long term chronic effects on predators. The risk assessment conducted for Threatened and Endangered (T&E) species (results are found in Section 5.2.2.11.A.2 of Vol. I of the FEIS) concluded that no chronic ingestion toxicities are anticipated for OPTM and EPTM alternatives when T&E species consume prey with depositional amounts of fog oil. Based on results of an ecological risk assessment which evaluated potential fog oil acute and chronic toxicities to amphibians, reptile and bird species, no chronic ingestion toxicities were predicted. The study, *Ecological Risk Assessment Effects of Fog Oil Obscurant on Selected Amphibians, Reptiles, and Birds at Fort Leonard Wood, Missouri* is available for public review at any one of 11 libraries identified in Vol. I, Subsection 1.4.6.3, of the FEIS. The response to comment G-OCSC.13 provides further discussion on PAH's from fog oil training as related to chronic exposures to the environment.
G-OCSC.30	TPA exposure concentration values used to calculate effects in the ERA were based upon maximum TPA concentrations that could be produced during training. To be conservative in calculating exposure, we assumed TPA concentration remained at this maximum throughout the 2.5 min burn time. Calculating exposure concentration in this way maximized the potential to identify effects of exposure. The USFWS Biological Opinion finds the proposed action will not jeopardize the continued existence of the Indiana bat.
G-OCSC.31	The installation will comply with reasonable and prudent measures, and the terms and conditions of the USFWS Biological Opinion and Take Statement. These include constraints on exposure of hibernacula and a maternity cave to unsafe concentrations of training materials. Moreover, even if practicable, the Army's obligation to operate within the existing air quality permit limits its ability to concentrate training during the period suggested.

1	G-OCSC.32	The USFWS Biological Opinion finds the proposed action will not jeopardize the continued existence of the gray bat. In the BO the USFWS issued reasonable and prudent measure (RPM) to minimize take of listed species, and these RPMs are listed in subsection 5.1.4.3.
2	G-OCSC.33	See the response to Heartwood comment number 2 (G-Hea.02).
3	G-OCSC.34	The USFWS Biological Opinion finds the proposed action will not jeopardize the continued existence of the gray bat.
4	G-OCSC.35	See response to Ozark Chapter Sierra Club comments numbered 13 (G-OCSC.13) and 29 (G-OCSC.29).
5	G-OCSC.36	See response to Ozark Chapter Sierra Club comment number 30 (G-OCSC.30).
6	G-OCSC.37	The USFWS Biological Opinion finds the proposed action will not jeopardize the continued existence of the bald eagle, Indiana bat, and gray bat. In the BO the USFWS issued reasonable and prudent measure (RPM) to minimize take of listed species, and these RPMs are listed in subsection 5.1.4.3.
7	G-OCSC.38	In 1996, an aerial survey for bald eagles could not be conducted because of inclement weather. As an alternative to the aerial survey, a pedestrian survey was conducted along the Big Piney River and Roubidoux Creek in 1996. The installation will comply with reasonable and prudent measures, and the terms and conditions of the USFWS Biological Opinion and Take Statement.
8	G-OCSC.39	Our analysis indicates acute or chronic effects are not likely. Studies completed by 3D/International did not indicate significant concentrations of aromatic compounds , specifically PAHs, in fog oil or fog oil smoke samples. Additionally, we tested mammals, insects, fish, plant tissue, bat guano, surface water, soil, and sediment for the presence of PAHs and other aromatic compounds. These samples were collected at Fort McClellan, Alabama from areas where fog oil training has occurred for over 10 years. None of the samples, when compared to reference site samples, showed statistically significant difference in concentrations of PAHs. Based upon results of this study, we conclude fog oil smoke contains little or no PAHs. Additionally, we conclude that if fog oil smoke contains PAHs, they are present in concentrations to that do not bioaccumulate to detectable levels.
9	G-OCSC.40	The USFWS Biological Opinion finds the proposed action will not jeopardize the continued survival and recovery of the bald eagle. In the BO the USFWS issued reasonable and prudent measure (RPM) to minimize take of listed species, and these RPMs are listed in subsection 5.1.4.3.
10	G-OCSC.41	The BA and EIS addressed effects to nesting bald eagles. No effects are anticipated. If nesting bald eagles begin to utilize areas affected by actions on the installation, FLW will initiate additional Endangered Species Act compliance efforts.

1	G-OCSC.42	Extensive informal and formal consultation has been completed with the Columbia Field Office of the USFWS to focus the Biological Assessment upon species and issues of concern. There are no known occurrences of the running buffalo clover on the installation. No effects are anticipated.
2	G-OCSC.43	Include a discussion that explains what species were considered in the analysis of subsections 5.2.2.11.B, 5.2.2.11.C, 5.2.2.11.D, and 5.2.2.11.E; and strengthen the tie to Appendix F which provides a listing of species. For species included in scoping comments that are not listed in Appendix F include a note in a new table that lists the species and states that based upon available information these species are not known to exist at FLW. Text has been added that explains the selection of species that were used as the basis of the ERA. In response to an USEPA comment the ERA will be modified to provide additional discussion on the background for the selection of the analysis species. See the response to Ozark Chapter, Sierra Club comment number 46 (G-OCSC.46) for additional information.
3	G-OCSC.44	A response to this comment is difficult as the comment lacks sufficient detail. We believe this comment is addressed by our responses to Ozark Chapter Sierra Club comments numbered 48 (G-OCSC.48) and 49 (G-OCSC.49).
4	G-OCSC.45	See the response to Ozark Chapter, Sierra Club comments numbered 43 (G-OCSC.43) and 46 (G-OCSC.46) for additional information.
5	G-OCSC.46	Species specifically evaluated in the Ecological Risk Assessment (ERA) were chosen for: • their physiological and behavioral similarity to species at FLW • the availability of information to assist in estimating exposure (habitat preference, reproductive biology, population density, diet diversity, and other life history characteristics), and • a geographic distribution that includes FLW and Fort McClellan. The species evaluated were chosen in coordination with the U.S. Fish and Wildlife Service. The species assessed in the ERA were evaluated for potential impacts and similar impacts are anticipated to species mentioned in scoping. Raptors and neotropical migrants were considered during the evaluation of impacts to other protected species. Impacts to individual species, such as raptor species or neotropical migrant species, are not discussed due to the large number of species that are included in this resource group.

G-OCSC.46 (cont.)	The level of impact for evaluation of impacts to threatened and endangered species is to the individual animal or species. The level of impact for evaluation of impacts to other protected species is the entire species population. Due to the size of the ranges of the species considered, the size of the species' populations, and the size and diversity of FLW the proposed action will not threaten the existence of any species. Scoping comments from the Ozark Chapter, Sierra Club and other groups and individuals provided a specific list of species to be considered. Appendix F has been modified to include a table listing all species mentioned in scoping and the resolution of their consideration. The introduction to subsection 5.2.2.11.B has been modified to explain why the species were selected for analysis in the Ecological Risk Assessment, and how the species are representative of other species anticipated to be present at FLW. This issue has also been addressed within the scope of the responses given to Ozark Chapter, Sierra Club comment number 43 (G-OCSC.43) and Environmental Protection Agency comment number 42 (F-USEPA.42), and Ozark Chapter, Sierra Club comment number 29 (G-OCSC.29).
G-OCSC.47	See the response to Ozark Chapter, Sierra Club comment number 46 (G-OCSC.46).
G-OCSC.48	This issue has been addressed within the scope of the response to Ozark Chapter, Sierra Club comment number 43 (G-OCSC.43).
G-OCSC.49	See response to Ozark Chapter, Sierra Club comment number 46 (G-OCSC.46).
G-OCSC.50	Volume IV documents the alternative formulation process, including consideration of training without the use of fog oil, training with reduced quantities of fog oil, without smoke grenades, or training without the use of other simulants or emission sources. These alternatives were determined to be non-viable in that they do not allow the Military Police School and/or the Chemical School to meet minimum training mission requirements. Table IV.1 in Volume IV documents this review and screening process.
G-OCSC.51	As discussed in response to Heartwood comment number 5 (G-Hea.05) computer simulations, videos, non-toxic substances and other options were included in the analysis of training alternatives to the extent possible. The alternatives formulation process is fully documented in Volume IV of the EIS.

G-OCSC.52	Dispersion modeling has been performed for the cumulative analysis. Air sources in the model as well as background concentrations were coordinated with MDNR and USEPA and include the initial background air quality levels for the surrounding community. Subsection 5.5 has been modified to include the additional analysis and results of the cumulative air quality impacts. The model included other major sources in the area such as charcoal kilns, power plants, and other industrial sources. Vehicle traffic, heating and cooling equipment, and wood burning stoves are incorporated through the use of a background concentration. Per discussions with MDOT, there are no planned major expansions of I-44 in the FLW region in their 15 year plan. Subsection 5.5 has been reorganized and modified to clarify the potential for cumulative impacts. See Environmental Protection Agency comment number 5 (F-USEPA.05) for additional discussion of cumulative impacts.

Pulaski County Landowners Association

PULASKI COUNTY
LANDOWNERS ASSOCIATION

G. Jones, Sec'y. 28484 Spring Rd. Richland, Mo. 65556

Nov. 14, 1996

Alan Gehrt
(attn.: MRKPD-R)
Kansas City District
U. S. Army Corps of Engr.
601 E. 12th St.
Kansas City, MO. 64106-2896

Sir:

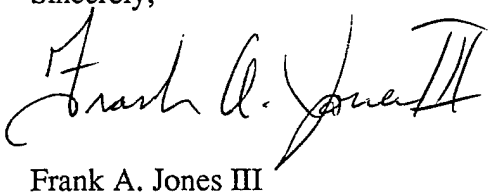
On behalf of the membership of the Pulaski County Landowners Association, I would like to reiterate and confirm our support for the move of the Army's Chemical Weapons Training School to Fort Leonard Wood. Despite all the noise and hoopla, we have seen no evidence whatsoever that this move would in any way affect the health and well-being of the people of this area, or have any effect on property values beyond possible enhancement due to the increased economic activity as a result of the move. We note that the opponents of the move have not seen fit, in the past, to decry this activity in its present location (where there doesn't seem to be any environmental damage), but instead, have raised objection only when infused with funds from economic interests that stand to lose business because of the move. The main organizations objecting to the move (The Coalition for the Environment and the St. Louis chapter of the Sierra Club) were the same ones who sponsored and promulgated the old Scenic Rivers proposals and the nefarious Natural Streams Act of years past. Any points raised by them, or objections made by them should be considered with that history in mind. Their relationship to the people of this area, and landowners in particular, has only been confrontational and adversarial at best. They have not had the best interests of the people of this area at heart in the past, and we very much doubt that they do now.

It is interesting to note that, despite all the emphasis on possible "potential" pollution made by these opponents, the largest point-source of stream pollution in the state of Missouri remains the Metropolitan Sewer District of St. Louis - to which both the Coalition and the St. Louis chapter of the Sierra Club happily contribute without any objection.

We again reiterate and confirm our support for the move. Its advantages are many, and in our view can only bring enhancement to our area. A great many of our members (myself included) have served in the military, and some now are employed by the military in some capacity. We would tend, in matters of military actions on a military base, to trust the judgment of military authorities FAR more than the judgment of the Coalition or the Sierra Club, whose past campaigns of lies and misinformation we recall with bitter

experience. Thank you for the opportunity to comment on this matter, and again, let the move begin: you have our support.

Sincerely,



Frank A. Jones III
President
Pulaski County Landowners Association

1	Comment noted.
2	

Rolla Area Chamber of Commerce

ROLLA

November 13, 1996

Harland Bartholomew & Associates, Inc.
Woods Mill Road South, Suite 330
Chesterfield, Missouri 63017

Dear Sir or Madam:

Fort Leonard Wood is located 28 miles west of Rolla, Missouri. Anything that happens in Fort Leonard Wood has an impact on Rolla and the surrounding area. The relationship between Fort Leonard Wood and Rolla has always been close and good, and we intend to keep it that way.

The relocation of the US Army Military Police and Chemical Schools to Fort Leonard Wood will impact our economy tremendously. The move itself will result in several construction projects, such as facilities being built for the specific purpose of housing these schools. The estimated cost of moving both schools in their entirety is $250 million. The relocation of the schools will also result in an increase in population for our area. Military personnel and their family members will create a major economic growth potential in our community which will lead to increased housing construction, employment opportunities, and of course an increase in retail sales and in the service market.

Fort Leonard Wood is not only a premier training facility for the US Army; it is also a multi-million dollar industry in the state of Missouri. It is unquestionable that Fort Leonard Wood runs a first-class operation. The US Army Engineering School and the Basic Training Center are two good examples of the professionalism that is being pursued at Fort Leonard Wood.

The Missouri Department of Natural Resources has issued environmental permits to enable Fort Leonard Wood to receive the Chemical School. We fully support Fort Leonard Wood in its missions, and we welcome new training missions in addition to the existing missions at Fort Leonard Wood.

In looking ahead, the move of the Military Police and Chemical School will, based on a five day work week, mean that Fort Leonard Wood will generate an economic impact of $2.5 million per day to our region.

Sincerely,

Don Johnson
President/CEO

DJ/rw

The mission of the Rolla Area Chamber of Commerce is to improve the overall business climate for members by creating programs and services which stimulate economic growth and enhance the quality of life in the Rolla area.

	Comment noted.

Anna-Maria Reigle

PUBLIC HEARING AND OPEN HOUSE
Fort Leonard Wood, Base Realignment and Closure Actions - 1995
COMMENT SHEET

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AS FAR AS I'AM CONCERNED, THE MOVE IS GREAT FOR FT. L. WOOD AND THE SURROUNDING COMMUNITIES. KEEP UP THE GOOD WORK!

(additional space on the back) >>>>

SEND COMMENTS TO:

Mr. Alan Gehrt

US Army Corps of Engineer
Kansas City District
601 E. 12th Street
Kansas City, MO. 64106-2896

YOUR NAME:

ANNA-MARIA REIGLE

Organization:

Address:
14495 HAZEL RD
WAYNESVILLE, MO 65583

	Comment noted.

Annora Davis

PUBLIC HEARING AND OPEN HOUSE
Fort Leonard Wood, Base Realignment and Closure Actions - 1995
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I have lived in the Ft. Leonard Wood area since 1941. I am in favor of the moving of the Military Police School and the Chemical School to Ft. Leonard Wood.

The army has been a good neighbor to this area. I do not see any reason why this move will be a problem for our environment. (Apparantely, it has not been a problem for Alabama, or they would not be trying so hard to keep it.) Tests and studies have been made. Now is the time to quit dragging our feet and get on with the move!

(additional space on the back) >>>>

SEND COMMENTS TO:

Mr. Alan Gehrt

US Army Corps of Engineer
Kansas City District
601 E. 12th Street
Kansas City, MO. 64106-2896

YOUR NAME:

Annora Davis

Organization:

Address:
P.O. Box K
Waynesville MO 65583

	Comment noted.

Bill Kesselring

PUBLIC HEARING AND OPEN HOUSE
Fort Leonard Wood, Base Realignment and Closure Actions - 1995
COMMENT SHEET

If you are interested in providing comments concerning the Draft Environmental Impact Statement for the realignment of the US Army Military Police School and US Army Chemical School to Fort Leonard Wood, please provide your written comments below and send to the address noted, or leave this form in the designated location at the November 14, 1996 Public Hearing and Open House.

I feel the positive effects of expansion of the Training mission on FLW will far exceed any negative.

This community needs jobs to provide for economic development. The expansion of missions on FLW and jobs related to them would greatly enhance economic development of this area.

I look forward to the future development of the FLW Area

(additional space on the back) >>>>

SEND COMMENTS TO:

Mr. Alan Gehrt

US Army Corps of Engineer
Kansas City District
601 E. 12th Street
Kansas City, MO. 64106-2896

YOUR NAME:

Bill Kesselring

Organization:

Ret. US Army

Address:

101 La Salle
Waynesville, Mo
65583

	Comment noted.

Bill Sellers

PUBLIC HEARING AND OPEN HOUSE
Fort Leonard Wood, Base Realignment and Closure Actions - 1995
COMMENT SHEET

If you are interested in providing comments concerning the Draft Environmental Impact Statement for the realignment of the US Army Military Police School and US Army Chemical School to Fort Leonard Wood, please provide your written comments below and send to the address noted, or leave this form in the designated location at the November 14, 1996 Public Hearing and Open House.

I am an officer in the Ford Dealership in St. Robert, MO. (The town just outside of the gates to Ft. Leonard Wood.) I have been in this area since 1977. I am in favor of the moving of the Military Police School and the Chemical School to Ft. Leonard Wood, MO. I have no fear that the U.S. Army will properly handle the training so it will not damage the environment of the area. Apparantely it has caused no ill effect in Alabama. I see no reason why it should be a problem for Missouri.

(additional space on the back) **>>>>**

SEND COMMENTS TO:

Mr. Alan Gehrt

US Army Corps of Engineer
Kansas City District
601 E. 12th Street
Kansas City, MO. 64106-2896

YOUR NAME:

Bill Sellers

Organization:

Sellers-Sexton Inc

Address:

PO Box K

Waynesville MO 65583

	Comment noted.

Charles E. Brown

CHARLES E. BROWN BEVERAGE CO.

Hwy. MM, P.O. Box 10 • Lebanon, MO 65536-0010 • (417) 532-6157

November 18, 1996

Alan Gehrt
Kansas City District
Corps of Engineers
601 E 12th Street
Kansas City, MO 64106-2896

Dear Mr. Gehrt:

I have attempted to attend all open meetings and any briefings regarding the move of training from Ft. McClellan to Ft. Leonard Wood and the related Environmental Impact Study. Unfortunately, I could not attend the Public Hearing on November 14, in Waynesville.

On September 17, I attended a briefing for area A.U.S.A. members, by General Clair Gill. He provided a detail summary of where we were and how we got there. It was my opinion that those involved - certainly the military - have done a very thorough job of crossing the t's and dotting the i's.

The studies completed, regarding the impact on the environment, have been unbelievable in depth, as pertains to air and water. I feel the military has gone the extra mile and has been diligent in pointing out and/or disclosing any potential consequences to our environment.

It is my belief that even those who are ideologically opposed to this transfer, due to their "environmental causes", will have trouble finding and proving negative ramifications due to this action. The studies conducted and completed have adequately and thoroughly addressed all aspects of the impact on our environment. Those against this transfer need to move on and end this ridiculous waste of taxpayers dollars..... especially, when the action being considered is intended to **SAVE** taxpayers dollars.

The military is and has been a good steward and will take whatever steps and precautions necessary to protect us and the environment.

Thank you for a positive review of this study.

Respectfully,

Charles Brown

Charles E. Brown

	Comment noted.

Christia Morrissey

Christia A. Morrissey
1507 Hull Valley Drive
Waynesville, MO 65583

November 14, 1996

To whom it may concern,

I appreciate this opportunity to review and comment on the draft Environmental Impact Statement prepared in support of the BRAC 95 move of the Military Police and Chemical Schools from Fort McClellan, Alabama to Fort Leonard Wood, Missouri.

I attended the scoping meeting last November, and have kept abreast of the progress through the newsletters and articles which have been published in various forums. I have been genuinely impressed with the effort that the Army has made to ensure that these missions are accomplished in an environmentally safe and sound manner, and to ensure that the public is kept informed.

I have reviewed the draft EIS and am satisfied that the impact that cannot be mitigated represents the least impact which will still allow our soldiers to be properly trained. It is vital that soldiers are adequately trained, both to protect themselves and to help them to defend us, and I am happy to see that meeting the training requirements has been considered in this draft EIS.

In summary, I am fully satisfied with the draft EIS. I believe it has helped the Army to minimize environmental impacts, and clearly demonstrates the alternatives considered and the logic behind the selection of the preferred alternatives.

CHRISTIA A. MORRISSEY

	Comment noted.

Debbie Becht

PUBLIC HEARING AND OPEN HOUSE
Fort Leonard Wood, Base Realignment and Closure Actions - 1995
COMMENT SHEET

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My family & I live near Ft Leonard Wood & plan to spend our future here. I have been in the area 11 years & have spent both in the U.S. Army. We want just outside the main gate & have a child attending East Elementary. Most of our leisure activities involve nature. We love to float & fish the streams & to hike on our own land & in the many forestry areas. I am certainly concerned with protecting our environment & have studied this issue. I believe that any adverse impact will be extremely minimal. After all, if this is such a Bad Thing, why would Ft McClellan fight so hard to keep the chemical school? Our technology is so much more advanced at this point that it should be even safer than the current school that is in operation. The economic impact will be a huge plus for our area also. I feel we can work with the army to insure a safe environment

(additional space on the back) >>>>

SEND COMMENTS TO:

Mr. Alan Gehrt

US Army Corps of Engineer
Kansas City District
601 E. 12th Street
Kansas City, MO. 64106-2896

YOUR NAME:

DEBBIE BECHT

Organization:

Address:

11126 Hwy Z
DEVILS ELBOW MO 65457

	Comment noted.

Dee Dokken
(I-DD)

208 Sanford Ave.
Columbia, MO 65203
November 25, 1996

Kansas City District Corps of Engineers
601 E. 12th Street
Kansas City, MO 64206-3358
FAX: 816-426-2142

Dear Corps:

I am writing to comment on the Draft Enivronmental Impact Statement for BRAC 95 activities at Fort Leonard Wood. I am concerned that the DEIS doesn't provide any alternatives with significant changes that reduce environmental impact. The risks associated with the Chemical Defense Training Facility are serious enough to warrent a "No Action" analysis, as well as other alternatives that would decrease environmental threats. | 1 | 2

The threats I am concerned with include the use of live nerve gas agents, the use of oily obscurant fog and it's effect on water quality, the use of radioactive elements, and inadequately monitored incineration of hazardous waste. | 3 | 4 | 5 | 6

Sincerely,

Dee Dokken

1	I-DD.01	Subsections 3.2.1 and IV.8 provide a description of how the training alternatives were developed. The potential reductions in environmental impacts between implementing the Relocate Current Practice (RCP) training method and either of the other two implementation alternatives (the Optimum Training Method (OPTM) or Environmentally Preferred Training Method (EPTM) are fully documented in Section 5 and summarized in Tables 5.29, 5.31, and 5.33.
2	I-DD.02	BRAC legislation mandates that the Chemical Defense Training Facility (CDTF) will operate at Fort McClellan until such time as the capability to operate a replacement facility at Fort Leonard Wood is achieved. Additionally, Volume IV Table 4.1, item 6.3, provides a discussion of the alternatives training methods considered to accomplish the goals of CDTF training, and rationale for the elimination of alternatives that rely on the use of simulated nerve agents.
3	I-DD.03	Table IV.1 in Volume IV provides a discussion of alternatives to the use of toxic agent within the controlled training areas of the Chemical Defense Training Facility. Based on the discussion contained in Volume IV, the Army's Proposed Action includes the use of limit quantities of toxic agents (GB and VX) within a highly controlled interior environment. No training with these toxic agents will be conducted in exterior training environments.
4	I-DD.04	Subsection 5.2.2.5.A.1 provides a discussion concerning the deposition of fog oil obscurant materials on surface waters. As stated in the discussion, any deposits would be extremely low in quantity and would be degraded rapidly through normal biological processes; consequently no significant adverse impacts on water resources are expected to occur as a result of fog oil training. However, water quality has been monitored prior to initiation of fog oil training at FLW, and will continue to be monitored after implementation to verify the conclusions documented in the EIS.
5	I-DD.05	Subsections 3.3.3.6.1, 3.3.3.6.4 and 3.3.3.8.1 describe the proposed usage of radiological isotopes in training as well as the controls that are in place to ensure that this training is conducted in a safe manner. Appendix B in Volume III contains a discussion concerning the types of radiological isotopes that will be used in training. Based upon the types and sizes of isotopes and the safety controls that are in place, no adverse impacts are expected to occur to trainers, students or the general public.
6	I-DD.06	As discussed in subsection 6.1, the Army's Proposed Action will not include the incineration of hazardous waste. Decontaminated waste by-products, which are not hazardous wastes, from the CDTF will be transported off-post and disposed of by licensed contractors.

7

Rev. Dennis Crowder

PUBLIC HEARING AND OPEN HOUSE
Fort Leonard Wood, Base Realignment and Closure Actions - 1995
COMMENT SHEET

If you are interested in providing comments concerning the Draft Environmental Impact Statement for the realignment of the US Army Military Police School and US Army Chemical School to Fort Leonard Wood, please provide your written comments below and send to the address noted, or leave this form in the designated location at the November 14, 1996 Public Hearing and Open House.

Keep up to your work of keeping us informed of the move.

I do trust the people we have making the decesion for us

(additional space on the back) >>>>

SEND COMMENTS TO:

Mr. Alan Gehrt

US Army Corps of Engineer
Kansas City District
601 E. 12th Street
Kansas City, MO. 64106-2896

YOUR NAME:

Rev Dennis Crowder

Organization:

Pulaski Baptist Assoc

Address:

26225 Silver Lane
Waynesville, Mo 65583

	Comment noted.

Dennis Taylor

PUBLIC HEARING AND OPEN HOUSE
Fort Leonard Wood, Base Realignment and Closure Actions - 1995
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If you are interested in providing comments concerning the Draft Environmental Impact Statement for the realignment of the US Army Military Police School and US Army Chemical School to Fort Leonard Wood, please provide your written comments below and send to the address noted, or leave this form in the designated location at the November 14, 1996 Public Hearing and Open House.

With information available to us, I am satisfied that a thorough examination of facts and conditions has been made. I think it would be in the best interest of the army, the Ft Wood area, and all taxpayers to accept the Environmental Impact Statement for the realignment of the MP school and Chemical schools.

(additional space on the back) >>>>

SEND COMMENTS TO:

Mr. Alan Gehrt

US Army Corps of Engineer
Kansas City District
601 E. 12th Street
Kansas City, MO. 64106-2896

YOUR NAME:
DENNIS TAYLOR

Organization:
SELLERS-SEXTON, INC.

Address:
PO Box 1503
ROLLA MO 65402

	Comment noted.

Erwin Morriss

PUBLIC HEARING AND OPEN HOUSE
Fort Leonard Wood, Base Realignment and Closure Actions - 1995
COMMENT SHEET

If you are interested in providing comments concerning the Draft Environmental Impact Statement for the realignment of the US Army Military Police School and US Army Chemical School to Fort Leonard Wood, please provide your written comments below and send to the address noted, or leave this form in the designated location at the November 14, 1996 Public Hearing and Open House.

I believe the environmental impact study done by the army is extremely thorough.

I do not have a concern about the chemical defense training being located at Fort Leonard Wood.

The smoke screening training does not appear to be any environmental hazard.

I support the smoke training mission at Fort Leonard Wood.

(additional space on the back) **>>>>**

SEND COMMENTS TO:

Mr. Alan Gehrt

US Army Corps of Engineer
Kansas City District
601 E. 12th Street
Kansas City, MO. 64106-2896

YOUR NAME:

ERWIN MORRISS

Organization:
Waynesville School Dist.

Address:
399 School St
Waynesville Mo

	Comment noted.

Gordon Rigsby

PUBLIC HEARING AND OPEN HOUSE
Fort Leonard Wood, Base Realignment and Closure Actions - 1995
COMMENT SHEET

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My family is very supportive of the MP & Chemical Schools coming to F.L.W. This has been a very well planned & organized process and will have a positive impact for our area and the entire county.

(additional space on the back) >>>>

SEND COMMENTS TO:

Mr. Alan Gehrt

US Army Corps of Engineer
Kansas City District
601 E. 12th Street
Kansas City, MO. 64106-2896

YOUR NAME:

Gordon Rigsby

Organization:

Address:
19676 Bobcat Rd
Waynesville, MO 65583

	Comment noted.

Gretchen Cadwallader

PUBLIC HEARING AND OPEN HOUSE
Fort Leonard Wood, Base Realignment and Closure Actions - 1995
COMMENT SHEET

If you are interested in providing comments concerning the Draft Environmental Impact Statement for the realignment of the US Army Military Police School and US Army Chemical School to Fort Leonard Wood, please provide your written comments below and send to the address noted, or leave this form in the designated location at the November 14, 1996 Public Hearing and Open House.

The OPTM alternative appears to strike a reasonable balance between the environmental concerns and the training requirements of the Chemical and Military Police Schools.

Thanks for providing an informative display prior to the formal presentation at the public hearing. I believe the EIS is taking into consideration the environmental and health considerations of the local area and population, balanced with the training necessities of preparing soldiers for surviving in chemically contaminated environments.

(additional space on the back) >>>>

SEND COMMENTS TO:

Mr. Alan Gehrt

US Army Corps of Engineer
Kansas City District
601 E. 12th Street
Kansas City, MO. 64106-2896

YOUR NAME:

GRETCHEN CADWALLADER

Organization:

Address:
22265 Reliable Road
Waynesville, MO 65583

	Comment noted.

Harry Reigle

PUBLIC HEARING AND OPEN HOUSE
Fort Leonard Wood, Base Realignment and Closure Actions - 1995
COMMENT SHEET

If you are interested in providing comments concerning the Draft Environmental Impact Statement for the realignment of the US Army Military Police School and US Army Chemical School to Fort Leonard Wood, please provide your written comments below and send to the address noted, or leave this form in the designated location at the November 14, 1996 Public Hearing and Open House.

I AM LOOKING FORWARD TO THE MOVE OF THE TWO SCHOOLS BEING COMPLETED. THE INCREASED POPULATION SHOULD MAKE IT POSSIBLE FOR OUR COUNTY TO PROVIDE SOME MUCH NEEDED INFRASTRUCTURE IMPROVEMENTS SUCH AS SEWERAGE SYSTEMS OUTSIDE CITY LIMITS. INCREASED POPULATION WILL INCREASE THE TAX BASE FOR PULASK COUNTY, THEREFORE THERE WILL BE MORE MONEY AVAILABLE FOR PROVIDING NECESSARY FACILITIES TO PROTECT OUR DRINKING WATER AND KEEP THE OZARK STREAMS CLEAN. THE FT WOOD BRAC TEAM HAS DONE AN EXCELLENT JOB PROVIDING UP-TO-DATE INFORMATION, TO THE COMMUNITY RESIDENTS, CONCERNING THE PROGRESS OF REALIGNMENT REQUIREMENTS

(additional space on the back) >>>>

SEND COMMENTS TO:

Mr. Alan Gehrt

US Army Corps of Engineer
Kansas City District
601 E. 12th Street
Kansas City, MO. 64106-2896

YOUR NAME:

HARRY E. REIGLE

Organization:

14495 HAZEL RD

Address:

WAYNESVILLE, MO 65583

	Comment noted.

James Nyberg
(I-JN)

PLEASE REPLY TO: JAMES J. NYBERG
P.O. BOX 50401
CLAYTON, MO 63105
314-725-0767

QUESTIONS TO BE ASKED AT THE PUBLIC HEARING ON NOVEMBER 14 ON FORT LEONARD WOOD'S ENVIRONMENTAL IMPACT STATEMENT ON THE ARMY CHEMICAL SCHOOL

1. We have heard incineration is no longer a viable consideration for disposing of materials which have been contaminated by nerve agent. Is that rumor correct? | 1
2. How do you plan to dispose of the nerve agent contaminated waste? | 2
3. Why was the choice for incineration abandoned? | 3
4. What will happen to the hazardous waste generated at the CDTF?
5. What type of contaminated trash is generated which will have to be hauled off site? | 4
6. Is contaminated water going to be hauled off site? | 5
7. What is in the water to be hauled off?
8. What is the chemical analysis of the water? Has a chemical analysis ever been done on the water at Ft. McClellan? When? What results? | 6
9. Has any outside independent laboratory ever analyzed the waste water? | 7
10. If off-site waste haul is the answer, why have they not ever used this procedure at Ft. McClellan, at the Anniston Army Depot, or at the Tooele Army Depot in Utah? | 8
11. Aren't the charcoal filters in the gas masks and the chemical protection clothing designed to absorb the nerve agent?
12. Wouldn't the nerve agent stay in the charcoal filters and possibly be released under certain conditions, such as a rise in temperature, which would cause the filters to release nerve agent into the atmosphere? | 9
13. If this is not a possible situation why does the Army destroy the charcoal filters by incinerating them at Ft. McClellan?
14. Why does the Army store the contaminated charcoal filters at Tooele Army Depot in Utah rather than transporting them off the military base? | 10
15. Who will be hauling the waste off site?
16. Will the contaminated trash, filters, and waste water ever leave government control? | 11
17. Will it ever be turned over to contractors to be transported and/or disposed of?

SUMMARY QUESTION

LIST HARMFUL MATERIALS THAT WILL LEAVE FLW, BY TRUCK, AIR, WATER RUNOFF, WATER SEEPAGE, ACCIDENT, ETC. | 12

HOW WILL THESE BE DECONTAMINATED? | 13

WHAT CHEMICAL/BIOLOGICAL ANALYSIS HAS BEEN DONE ON THESE MATERIALS? PLEASE CITE REFERENCES. | 14

HOW WILL THESE PRODUCTS BE CONTROLLED FOREVER? | 15

ARE ANY OF THE PROPOSED PROCESSES NEW, I.E. NOT ALREADY PROVEN AT FT. MCCLELLAN? IF SO, PLEASE ELABERATE. | 16

18. **Where will the waste be taken?** | 17

19. **What will happen to the waste and how will it be disposed of?** | 18

20. **Why have we not been informed of these plans before now?** | 19

21. **What kind of permits and approvals will be needed for this new off-site hauling proposal?**

The men and women in our military services get into harm's way for us. They deserve superb training. I am not hostile to the mission of FLW.

James J. Nyhan

1	I-JN.01	The Army's is not proposing the use of a thermal treatment unit on-site for the disposal of decontaminated waste by-products from the CDTF. See discussion in response to Heartwood comment number 13 (G-Hea.13). Consideration of the environmental impacts associated with the construction and operation of a thermal treatment unit is included as part of the RCP Alternative. As stated in Appendix I, subsection I.2.1, 2) and 3), disposal by a thermal treatment unit similar to the one at FMC (and supplemented with air monitoring equipment and a carbon absorption filter system); or, effective modification of the existing medical waste incinerator at the General Leonard Wood Army Community Hospital are considered to be viable alternatives. However, as discussed in the EIS, the Army's Proposed Action calls for disposal of waste materials off-site through the use of licensed contractors.
2	I-JN.02	Subsection 5.2.2.8.5 discusses waste handling and management at FLW. See discussion in response to Heartwood comment number 13 (G-Hea.13) and Ozark Chapter Sierra Club comment number 16 (G-OCSC.16).
3	I-JN.03	Subsection 5.2.2.8.5 discusses waste handling and management at FLW. See discussion in response to Heartwood comment number 13 (G-Hea.13) and Ozark Chapter Sierra Club comment number 16 (G-OCSC.16).
4	I-JN.04	Subsection 5.2.2.8.5 discusses waste handling and management at FLW. See discussion in response to Heartwood comment number 13 (G-Hea.13).
5	I-JN.05	Subsection 5.2.2.8.5 discusses waste handling and management at FLW. See discussion in response to Heartwood comment number 13 (G-Hea.13).
6	I-JN.06	Subsection 5.2.2.8.5 discusses waste handling and management at FLW. See discussion in response to Ozark Chapter, Sierra Club comment number 15 (G-OCSC.15).
7	I-JN.07	Subsection 5.2.2.8.5 discusses waste handling and management at FLW. See discussion in response to Ozark Chapter, Sierra Club comment number 15 (G-OCSC.15) and Missouri Coalition for the Environment comment number 14 (G-MCOE.14).
8	I-JN.08	The Army does use off-site disposal for materials similar to those that are a by-product of CDTF training activities at Tooele (and other Army locations) where this form of waste is generated. However, many of the operations at Tooele (and other Army locations) result in wastes that are not appropriate for disposal in this manner. The decontaminated waste by-products associated with CDTF operations are not as difficult to handle or dispose of as many of the wastes associated with the disposal of chemical weapons at Army Depots such as Anniston or Tooele. As discussed in response to Heartwood comment number 13 (G-Hea.13) the analysis of alternative methods for disposal of wastes from the CDTF was initiated as part of the alternatives formulation process conducted in support of this EIS. That process led to the identification of off-site disposal of the CDTF waste by-products as the Army's preferred method.

1	I-JN.09	As stated in subsection 5.2.2.8.5 and Appendix I, the charcoal filters are included as part of the estimated "12,880 pounds per year of solid waste consisting entirely of used Battle Dress Overgarment (BDO) uniforms" generated at the CDTF. The disposal procedure of BDO uniforms is described in 5.2.2.8.5 and Appendix I. If disposal of the decontaminated solid wastes off-post is selected for implementation (as stated in subsection 5.2.2.8.5) prior to transportation the wastes will have been monitored for off-gassing for a minimum of 48 hours to verify that vapor concentrations of agent above established safety standards do not exist. The filters would then be transported off-post for further treatment/disposal. If the filters were later incinerated the incineration process would further destroy residual agents.
2	I-JN.10	Fort Leonard Wood cannot respond to activities at Tooele, but as discussed in subsection 5.2.2.8.5, the Army is currently using filters which contain chromium which results in the filters being designated as a hazardous waste upon the completion of their use. These filters are then disposed of as a hazardous waste. The Army will be using new filters by 1999 that will not contain chromium and therefore will not be considered hazardous at the completion of the training mission. These new charcoal filters will be disposed as special wastes as discussed in subsection 5.2.2.8.5. Additionally, as discussed in subsection 5.2.2.8.5, a minimal number of chromium filters will continue to be used by foreign students and disposed as hazardous wastes.
3	I-JN.11	Subsection 5.2.2.8.5 discusses waste handling and management at FLW. See discussion in response to Heartwood comment number 13 (G-Hea.13).
4	I-JN.12	Those items currently generated by FLW are listed in subsection 4.8.1, which includes additional detail concerning existing FLW procedures for the disposal of these items. Subsection 5.2.2.8.5.2 has also been modified to provide additional detail concerning the BRAC related waste products.
5	I-JN.13	Subsection 5.2.2.8.5 discusses waste handling and management at FLW. See response to Heartwood comment number 13 (G-Hea.13).
6	I-JN.14	See response to Ozark Chapter, Sierra Club comment number 15 (G-OCSC.15) and Missouri Coalition for the Environment comment number 14 (G-MCOE.14).
7	I-JN.15	See response to Heartwood comment 13 (G-Hea.13).
8	I-JN.16	Off-site disposal of decontaminated training materials from the CDTF has not been implemented at FMC. However, this procedure is being used by the Army Chemical Demilitarization Program. Use of fog oil recycling and water manifolds for static obscurant training has not been implemented elsewhere within the Army as discussed in subsection 3.3.3.7.

1	I-JN.17	Subsection 5.2.2.8.5 discusses waste handling and management at FLW. See response to Heartwood comment number 13 (G-Hea.13) and the response to Kay Drey's comment number 13 (I-KD.13).
2	I-JN.18	Subsection 5.2.2.8.5 discusses waste handling and management at FLW. See response to Heartwood comment number 13 (G-Hea.13).
3	I-JN.19	Subsection 5.2.2.8.5 discusses waste handling and management at FLW. See response to Heartwood comment number 13 (G-Hea.13).
4	I-JN.20	No new permits will be required by the Army to implement the Army's Proposed Action for off-site disposal of Chemical Defense Training Facility waste by-products. The individual contractor and site selected would be responsible for obtaining and maintaining proper permit which will be a factor in the contractor selection process.

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John Johnson

PUBLIC HEARING AND OPEN HOUSE
Fort Leonard Wood, Base Realignment and Closure Actions - 1995
COMMENT SHEET

If you are interested in providing comments concerning the Draft Environmental Impact Statement for the realignment of the US Army Military Police School and US Army Chemical School to Fort Leonard Wood, please provide your written comments below and send to the address noted, or leave this form in the designated location at the November 14, 1996 Public Hearing and Open House.

As a recently retired career US Army officer and now a private citizen in the FT Leonard Wood area I have the utmost confidence in the quality and depth of this environmental impact statement. Speaking from 30 years experience in the area of engineering and environmental management as a professional engineer I am certain that I also that this impact statement has had more than adequate resources dedicated to it financially and human, and that the national experts available in these complex fields have been utilized in assistance to FT Leonard Wood

The team working on this project have accomplished this impact statement in a professional and in depth manner with full disclosure to the public and have addressed all public concerns.

I do wholeheartedly believe this project has been fully analyzed and all relevant impacts presented to the decisions maker in the Army to consider in implementing this difficult relocation

(additional space on the back) **>>>>**

SEND COMMENTS TO:

Mr. Alan Gehrt

US Army Corps of Engineer
Kansas City District
601 E. 12th Street
Kansas City, MO. 64106-2896

YOUR NAME:

John Johnson

Organization:

Address:
PO Box 2101
Ft Leonard Wood, Mo
65473

ADDITIONAL COMMENTS:

action.

I have reviewed this document in its various stages of preparation as well as interim (tentative) decisions the post has already made on behalf of environmental management, preservation, and excellence and find all to be very professional and appropriate.

I believe this document more than adequately depicts the relocation action and all its ramifications to the public.

In summary, I support the process Ft Leonard Wood is using in this effort and feel confident the natural resources in and around Ft Leonard Wood will receive the greatest of attention and care in the relocation process as well as community impacts. The installation has a long history of excellent environmental management and is a leader in the nation in this area. This action is further testimony to this fact.

I do request a copy of the completed environmental impact statement and supporting studies at their completion and signing of the record of decision.

As a person genuinely concerned for the environment and natural outdoorsman — Thank You.

	Comment noted.

Kay Drey
(I-KD)

Comments re the Draft EIS for the Proposed Relocation of the U.S. Army Chemical School to Fort Leonard Wood, Missouri, from Fort McClellan, Alabama.

++ presented at the November 14, 1996, public hearing at Waynesville High School -- with some supplemental information:

My name is Kay Drey. I live in University City, and am speaking on behalf of the Missouri Coalition for the Environment. The true topic of tonight's public hearing is apparently jobs, not the environment. According to medieval German legend, Faust was a magician who sold his soul to the devil in exchange for knowledge and power. The Army has laid a Faustian bargain before the communities surrounding Fort Leonard Wood: either you accept nerve gas, chemical weapons, live biological agents, and radioactive waste -- or Fort Leonard Wood will be shut down forever.

St. Louis's daily newspaper has not told its public much about this deal and about the hazards involved, even though -- as St. Louisans -- we live only about 100 miles away, and even though many of us love the woods and streams of the Ozarks as much as the people who live here do. I do not know how much information the daily newspapers in Waynesville, Rolla, and Lebanon have reported about the potential environmental impacts. But my guess is: not much. I only know that, according to the federal and state documents I have read, the proposed relocation of the Army Chemical School from Alabama to Missouri would bring with it not just jobs -- but also great environmental and human health risks.

Risk assessment and risk communication are favorite new buzzwords of chemical manufacturers and others who negotiate with communities to get them to accept the construction or operation of various hazardous facilities. I think Rolla, Waynesville and Lebanon have been persuaded by the risk peddlers to accept a facility with potential hazards that we already know about, but also with hazards that the Army may not yet have recognized or is not admitting. In the most recent Disabled American Veterans' magazine [Nov/Dec 1996], the DAV Executive Director said the following regarding the belated release of information about the chemical weapons (including nerve and mustard gas) stored in an Iraqi ammunition depot that was destroyed by U.S. troops in March 1991,

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at the end of Operation Desert Storm: "The DAV immediately called for congressional hearings to find out just what our government knew and why, after five years, we're just now hearing about incidents like this and the implications for the many veterans suffering from unexplained illnesses known as the Gulf War Syndrome." The DAV's National Commander called it either "a tragic blunder or part of a deliberate cover-up." [emphases added]

Regarding the toxicity of the many chemicals that will be brought to or generated at Fort Leonard Wood: the Army has been using hexachloroethane at Fort McClellan in Alabama as the base for its smoke pots and smoke grenade systems -- that is, the obscurants used to conceal or screen the movement of troops and vehicles. It turns out that hexachloroethane is extremely toxic. I brought along a copy of a U.S. Public Health Service [Agency for Toxic Substances and Disease Registry] draft toxicological profile, published in 1994, that describes the facts known about the chemical's toxicity, and lists other studies not yet performed. Hexachloroethane is so toxic that OSHA -- the U.S. Occupational Safety & Health Administration -- sets the Permissible Exposure Level for a worker at only 10 milligrams per cubic meter in the workplace atmosphere. The OSHA standard for hexachloroethane is more stringent than for ammonia, benzene, carbon monoxide, or chloroform.

How ironic that we should train and hide our friendly forces in a cloud of toxic chemicals! And depending upon weather conditions, the fog oil fallout and runoff can affect wide areas outside the military base -- with potentially profound adverse impacts on the Big Piney River, Roubidoux Creek, the Gasconade, and beyond.

In order to reduce the impact of fog oil on humans, fish and wildlife in the surrounding communities, the Army has proudly announced in its Draft EIS that it is in the process of converting its smoke systems from a hexachloroethane base -- to terephthalic acid. (DEIS, Vol.I, p.1-11. Also see the Draft Biological Assessment on Federally-listed threatened and endangered species, September 1996, for example, re TPA Grenades and TPA Smoke Pots, starting at p. 67; and the Draft

bats, gray bats, and bald eagles at Fort Leonard Wood, Missouri, [BA Appendix 4] September 1996, for example, at pp. 11, 40, 51, 92, 194.)

To my amazement, I have just learned that, according to the current OSHA values, terephthalic acid has the identical, very restrictive Permissible Exposure Level or Threshold Limit Value [American Council of Governmental Industrial Hygienists] as hexachloroethane. That is, the Army is replacing the initial toxic fog oil chemical -- hexachloroethane -- with another chemical that is equally, highly toxic! [See the Registry for Toxic Effects of Chemical Substances, published by NIOSH; and the Hazardous Substances Database of the Science Technical Network, American Chemical Society, 1995.]

3 cor

My concerns about the Army Chemical School include not only the human health and environmental impacts the Army has told us about, but also the many unknowns. Just last year, well-publicized questions about environmental toxins were raised initially by grade-school children in Minnesota when they found deformed frogs. Our whole nation has now been alerted to this phenomenon. Even scientists have admitted they are disturbed about the growing evidence of widespread populations of deformed amphibians in the United States and Canada. And they are perplexed about the causes.

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According to a letter I received from the Missouri Department of Natural Resources, dated October 25, Fort Leonard Wood will possess only "very small quantities of nerve agents for use in training soldiers. True, the training exercises will use live nerve agents. However, this training is conducted within a highly specialized building with numerous safeguards in place to insure that the nerve agents cannot escape."

I do not believe that the Missouri Department of Natural Resources can accurately predict today the amount of nerve agents that will be stored, or used, or ultimately stockpiled at Fort Leonard Wood. The quantities of chemicals listed in the Draft EIS are described as "approximate" and are merely estimates. They can be changed and in fact are already being changed before construction of the Army Chemical School has even begun at Fort Leonard Wood. The Missouri DNR and the

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Air Conservation Commission rushed through the air-permit process and issued a variance for a non-existing facility. (This variance was later set aside by the Circuit Court.) The DNR performed various other shenanigans, as well, to try to justify the issuance of a permit to allow the Army to release 65,000 gallons per year of fog oil into the air, which the dispersion models indicate would result in concentrations of pollutants that would exceed the maximum federal and state air standards. Now the Army says it wants to release even more fog oil -- 84,500 gallons per year -- and in fact, in the Draft EIS, Volume I, the Army acknowledges that it had "erroneously omitted the Army Reserve personnel portion of fog oil training" [page 3-30], and that the annual amount of fog oil it might want to use could be as much as 125,500 gallons per year, or twice the currently permitted amount. [pp. 3-34 and 5-31] This type of increase, by the way, is exactly what the Coalition for the Environment predicted, during the May 1995 Air Conservation Commission hearing, the Army would seek -- based on the Fort McClellan fog oil usage and projected usage.

I believe the State Department of Natural Resources will not be able to enforce effectively any limitations with respect to the amounts of fog oil to be put into the Ozark air under DNR's permit. In fact, I suspect the DNR will not even know how much has been released until after the Army has filed its annual release report sometime after the end of each year.

I also believe the DNR cannot predict with any assurance where or how the chemical, nerve gas, and live biological agent training and maneuvers will be conducted. Perhaps initially those exercises will be restricted to the interiors of sealed buildings and laboratories. However, already more than a year ago, the Army at Fort McClellan began conducting live biological agent tests outdoors (using agents not currently known to be toxic). Admitting the Army Chemical School into our state is like letting the camel's nose into the tent. Once the federal foot is in the door, the state will not only be unable to close the door, but I believe the state will not even know what is going on behind the door -- that is, on the base. The federal government will not be required to inform the state about changes. National security

precautions will preclude that. For example, we may never find out whether GB (Sarin) nerve gas is manufactured off-base and transported into Missouri -- or whether it is produced at Fort Leonard Wood. I think it is extremely significant that the Army is currently authorized to manufacture nerve gas at Fort McClellan and that, in fact, Fort McClellan is the only institution in the world legally licensed to manufacture Sarin nerve gas under existing international treaties. As we learned at the time of the Tokyo subway attack last year, inhaling one drop -- one drop -- of Sarin nerve gas can be lethal. 10

The state cannot accurately predict the quantities to be used -- or the ultimate disposition of the biological, chemical, nerve or radioactive wastes. In some parts of the Draft EIS, it is suggested that incinerators may be used, and elsewhere, it says they won't be used. I do not believe the Army really knows at this time what it will do. The decision may well be decided by the results of the pending litigation about the state air permits. If the Army were ever to prepare a dispersion model of the materials to be released into the air -- using a combination of the estimated incinerator emissions PLUS the estimated fog oil emissions -- the state and federal air standards would be exceeded by an even greater margin. 11 12

I suspect it is easier and more expedient for the Army to claim, for now, that incinerators would not be used -- a prediction we probably all hope would hold true. Incinerators do disperse toxic materials -- and current monitoring technologies can only identify from 10 to 15 percent of the materials that are released out of the stacks.

I believe it would be quite likely that the Chemical School would not be able to send its wastes off-site, even if it now proposes to do so. No one would want them. Radioactive waste is a good case in point. Missouri is a part of the Midwest Radioactive Waste Compact. Michigan was the first appointed host state for the Midwest wastes, and it promptly got itself expelled from the compact. Because Ohio is now the second chosen host state, Ohio citizens are busily circulating a petition to let them vote on a constitutional amendment that would ban the entry of any radioactive waste from outside Ohio. 13 14

If the Army Chemical School were to become a reality in Missouri,

I believe it would be quite possible that the Army would at some point decide to transport some of America's 30,000 tons of chemical weapons agents, currently stockpiled elsewhere, into Missouri for disposal -- that is, some of the wastes located in Alabama at Fort McClellan, and in Arkansas, Indiana, Kentucky and Maryland. I believe it is naive to rely on the hope that the Army would not bring any of its wastes into Missouri -- and equally naive to hope that any other state or community would voluntarily accept Fort Leonard Wood's chemical agents or radioactive wastes.

I'm traditionally an optimist and work hard for goals I think can be achieved. Never before have I spoken publicly in opposition to a project that already seems to be a done deal. But I'm here tonight because I still have a glimmer of hope that the citizens of Fort Leonard Wood's neighboring communities will recognize the dangers of the Army's Chemical Training School and will take the lead in urging Governor Mel Carnahan to reconsider his support of it. We hope the Governor, as he begins his second term, will not permit his administration to be remembered for having imperiled the health and safety of his Missouri citizens by the potential dissemination of chemical, biological, and radioactive poisons into our air, water and land. It's not too late.

The Coalition for the Environment requests that the details that are missing from the Draft EIS be supplied and that the comment period be extended at least an additional thirty days, so that the public can know what is really being planned and can then comment intelligently on it.

Thank you.

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To: Mr. Alan Gehret [MRKEP-PR]
U.S. Army Corps of Engineers
601 East 12th St.
Kansas City, MO 64106-2896

816/426-3358

From: Kay Drey
515 West Point Ave.
University City, MO 63130

314/725-7676

Mrs. Lee Dray
515 West Point Avenue
University City, MO 63130

November 25, 1996

Kansas City District
U.S. Army Corps of Engineers

Attention: Alan Gehrt (MRKEP-PR)

Please consider this letter an addendum to my November 14 comments.

While I appreciate the efforts the Army has undertaken to make the Draft Environmental Impact Statement regarding the relocation of the Army Chemical School from Fort McClellan to Fort Leonard Wood available to the public, I believe you should take into consideration the fact that most members of the public, as volunteers, must fit their study of government documents into their already crowded work, family and community schedules. I remain convinced that a 45-day comment period simply is not adequate to perform a careful examination of the multi-volume DEIS and its support documents, and certainly not adequate to track down, let alone obtain and study the reference documents cited. 17

Your November 22 letter to me, denying our request for an extension of the public review and comment period, is misleading, if not incorrect. For example, no mailing informed us of the change in composition of the fog oil from hexachloroethane to terephthalic acid, and the DEIS does not adequately inform us of the composition or propensities of this substitute material. 18

I would like to repeat my request for an extension of the public comment period after the needed information has been provided.

Sincerely,

Kay Dray

p.s. It is not clear, as mentioned in your November 22 letter, why continuing to operate the Army Chemical School in Alabama an additional month -- to allow for an extension of the public comment period -- would cost the Army and taxpayers approximately $3 million more than operating the school in Missouri.

1	I-KD.01	See response to Missouri Coalition for the Environment comment number 6 (G-MCE.06).
2	I-KD.02	See response to Kay Drey's verbal comments (Trans-KD.02).
3	I-KD.03	A more detailed discussion of the toxicity of terephthalic acid and human health implications has been added to subsection 5.2.2.15.B.2.
4	I-KD.04	See response to USEPA comment (F-USEPA.01).
5	I-KD.05	As stated in response to Kay Drey's verbal comments (Trans-KD.06), subsection 5.2.2.8.5 and Volume III Appendix B, Subsection B.2.12.3 contain information concerning the amount of agents the Army proposes to use at FLW. No weapons will be stockpiled at FLW. Significant changes to the estimated quantities of training materials that will be stored at FLW will require additional environmental review in accordance with AR 200-2. The Chemical Weapons Convention would also restrict the amount of nerve agents allowed to be stored.
6	I-KD.06	See response Ozark Chapter, Sierra Club comment number 18 (G-OCSC.18)
7	I-KD.07	As stated in subsection 3.3.3.7, "...FLW will adhere to all permit conditions in effect at the time training occurs" including the daily and annual limits on fog oil usage included in the existing air quality permit." The fog oil permit requires FLW to record daily and hourly consumption of fog oil. FLW is then required to record monthly quantities used. As part of the additional discussion included in subsection 5.1.4.2 (see response to comment number USEPA.C03) information concerning the record keeping requirements that will be required of the Army to ensure compliance with the Air Quality permit has been provided. FLW has developed a Monitoring Plan Summary which has been included in Vol. III, Appendix K of the FEIS. The fog oil air permit requires the Army to conduct ambient air monitoring pre- and post-training for both particulate matter (10 microns or less) and ozone. Soil and vegetation monitoring will also be conducted.
8	I-KD.08	As stated in response to Kay Drey's verbal comment (Trans-KD.08), subsections 3.3.3.1.4, 3.3.3.1.7, 3.3.3.3, 3.3.3.4, and 3.3.3.6 provide information on "chemical" training, while training at the CDTF is discussed in subsection 3.3.3.6.3. Additionally, as stated in response to Kay Drey's verbal comments (Trans-KD.08), subsections 3.3.3.1.4, and 3.3.3.2 provide information on the use of biological materials that simulate biological agents in training.
9	I-KD.09	Subsection 1.3.2.2 of the EIS identifies procedures that will be used to ensure that future mission changes are subject to appropriate environmental review and public disclosure, review and comment. In addition, Appendix K, Volume III, provides an overview of a monitoring plan that will ensure that environmental impacts (or lack thereof) are consistent with conclusions presented in the EIS.

1	I-KD.10	As stated in response to Kay Drey's verbal comments (Trans-KD.10), subsection 5.2.2.8.5 provides a discussion concerning the transportation of the binary components used in toxic agent training, and the mixing of these items at the CDTF. Toxic agent will not be manufactured off-post and transported into Missouri to support CDTF training requirements. The second part of the issue is discussed in response to Kay Drey's verbal comments (Trans-KD.11) and subsection 1.4.6.5 which notes that the Chemical Weapons Convention acknowledges the need to train personnel in the location, identification and decontamination of nuclear, biological and chemical agents that might be encountered; and to establish and maintain proficiency with defensive measures required to protect civilian and military personnel and equipment from these types of weapons. Additionally, as stated in subsection 5.2.2.8.5, the CDTF standard operating procedures restrict the amount of GB and VX that may be stored on site to less than the limits authorized by the Chemical Weapons Convention.
2	I-KD.11	As stated in response to Kay Drey's verbal comments (Trans-KD.12), regarding the concern that the Federal government will expand the mission of the Chemical School (or other activities at FLW) without public disclosure, subsection 1.3.2.2 of the EIS addresses this concern, and identifies procedures that will be used to ensure that future mission changes are subject to appropriate environmental review and public disclosure, review and comment. Significant changes to the estimated quantities of training materials that will be stored at FLW will require proper environmental review in accordance with AR 200-2. The estimated quantities of various materials to be used are identified in Appendix B. Subsection 5.2.2.8, which has been modified to more clearly describe the disposal of BRAC related wastes. Disposal of the by-products of nuclear, biological, and chemical training will be in accordance with all Federal, state, and local regulations, and as disclosed in this EIS.
3	I-KD.12	As stated in response to comment I-KD.14, and as discussed in subsections 3.3.3.6.3 and 5.2.2.3.6.2, the Army's Proposed Action will not include the incineration of decontaminated waste by-products from CDTF training. Cumulative impacts have been addressed in response to Environmental Protection Agency comment number 5 (F-USEPA.5).

1	I-KD.13	Subsection I.3.4 of Appendix I of Volume III states that "...The review of alternative disposal methods, disposal commercial contractors and disposal sites indicated that numerous sites, methods and contractors were authorized and interested in handling disposal of the decontaminated liquid and solid special wastes associated with toxic agent training. As new technologies become available and effective in handling the wastes, the Army would base their decision as to which disposal method to use based on competitive selection criteria...." The discussion in subsection 5.2.2.8.5 has been modified to capture similar wording. See response to Heartwood comment number 13 (G-Hea.13).
2	I-KD.14	See response to Kay Drey's verbal comments (Trans-KD.16).
3	I-KD.15	As stated in response to Kay Drey's verbal comment (Trans-KD.17), none of the facilities at FLW will be capable of supporting Chemical Weapons Demilitarization. As discussed in the Executive Summary (subsection ES.3.1) Anniston Army Depot is not part of FMC or the Chemical School, and is not dependent on the Chemical School, and will not be moved to FLW. Additionally subsection ES.3.1 provides a commitment by the Army that the operation of the CDTF does not require the relocation of stockpiled chemical weapons and that FLW will not be used to stockpile chemical weapons, manufacture or use toxic bacterial agents, or use toxic nerve agent in any uncontrolled or exterior environment.
4	I-KD.16	See response to Heartwood comment number 1 (G-Hea.01).
5	I-KD.17	See the response to Heartwood comment 1 (G-Hea.01).
6	I-KD.18	As stated in response to comment number "Trans-KD.02", fog oil emitted from generators is the primary obscurant in training at FMC and will continue to be the primary form of obscurant training at FLW. Other forms of obscurants (including smoke pots and grenades) are used prior to generating fog oil obscurant to determine dispersion patterns, and smoke pots may also be used during fog oil generation to fill localized holes in the fog oil obscurant cloud. Both of these other forms of obscurants may also be used independently (not in association with fog oil training) in small quantities. However the current permit does not allow for smoke pots to be used in conjunction with fog oil training. As discussed in response to Heartwood comment number 1 (G-Hea.01), all comments submitted after the close of the DEIS comment period will be forwarded to the decision-maker for consideration.

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Marvin Jett

PUBLIC HEARING AND OPEN HOUSE
Fort Leonard Wood, Base Realignment and Closure Actions - 1995
COMMENT SHEET

If you are interested in providing comments concerning the Draft Environmental Impact Statement for the realignment of the US Army Military Police School and US Army Chemical School to Fort Leonard Wood, please provide your written comments below and send to the address noted, or leave this form in the designated location at the November 14, 1996 Public Hearing and Open House.

I AM VERY MUCH IN FAVOR OF BOTH THE M.P. SCHOOL AND THE CHEMICAL SCHOOL BEING MOVED TO FT. LEONARD WOOD, MO. THE ECONOMIC IMPACT WILL HAVE A TREMENDOUSLY POSITIVE EFFECT FOR THE SURROUNDING AREA AND WILL ACCOMPLISH THE BRAC GOAL OF MORE EFFICIENT & EFFECTIVE TRAINING.

I ALSO HAVE EVERY CONFIDENCE THAT ANY EFFECT ENVIRONMENTALLY WOULD ONLY BE A POSITIVE ONE. HAVING LIVED IN THIS AREA MUST OF MY LIFE I HAVE WITNESSED THE MILITARY'S COMMITMENT TO THE PROTECTION AND IMPROVEMENT OF OUR LOCAL ENVIRONMENT, AND WOULD EXPECT MORE OF THE SAME IN THE FUTURE.

(additional space on the back) **>>>>**

SEND COMMENTS TO:

Mr. Alan Gehrt

US Army Corps of Engineer
Kansas City District
601 E. 12th Street
Kansas City, MO. 64106-2896

YOUR NAME:

MARVIN L. JETT

Organization:

Address:
1505 MCCUTCHEN
ROLLA, MO.

	Comment noted.

Marvin Long

PUBLIC HEARING AND OPEN HOUSE
Fort Leonard Wood, Base Realignment and Closure Actions - 1995
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I was a elementary school student at the time construction @ Ft. Leonard Wood began. The area suddenly changed from a quiet little town in a farming community to a very busy area with dozens of new students in the schools each day and housing needs to be filled.

I have seen Ft. Leonard Wood at the very busiest, and the very slack times after World War II. Ft. Leonard Wood and the adjoining area has always handled the needs of the people both on and off post and I feel they are more capable today to operate in a efficient manner than any time in the past.

I feel this move would be good for the area and the area is capable of supplying the needs of the people affiliated with the schools.

(additional space on the back) **>>>>**

SEND COMMENTS TO:

Mr. Alan Gehrt

US Army Corps of Engineer
Kansas City District
601 E. 12th Street
Kansas City, MO. 64106-2896

YOUR NAME: Marvin Long

Organization: A Concerned Citizen

Address: 26065 Sutherland Ln
Waynesville, Mo 65583

	Comment noted.

Mike Freeman

PUBLIC HEARING AND OPEN HOUSE
Fort Leonard Wood, Base Realignment and Closure Actions - 1995
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The message is clear!!!
The fact exists clearly, now that the local environment would not be affected by the U.S. Army Chemical and Military Police Schools move to Fort Leonard Wood Missouri. In addition all precautionary measures are being and will always be taken to further protect the community and the local environment from the training exercises.
If the past U.S. Army military posts have had positive environmental efficiencies from the training that has occured, what better than to have quality state of the art facilities built here at Fort Leonard Wood!
Thus I fully support the moves of both U.S. Army schools to Fort Leonard Wood.

(additional space on the back) **>>>>**

SEND COMMENTS TO:

Mr. Alan Gehrt

US Army Corps of Engineer
Kansas City District
601 E. 12th Street
Kansas City, MO. 64106-2896

YOUR NAME:

MIKE FREEMAN

Organization:

Address:
P.O. Box 631 SRB
WAYNESVILLE, MO 65583

	Comment noted.

Paul Albertson
(I-PA)

24 Nov. 1996

Mr. Alan Gehrt,

Comments of Fort Leonard Wood BRAC Draft EIS.

After studying the EIS, I have the following comments:

- The report overall is a good job and a salute should go to the BRAC team.

Two concerns need additional attention considering the risk involved.

- Groundwater. 1
- Soil Erosion. 2

Both issues are addresses but not with sufficient detail for the risk at stake. For example, soil erosion is a stated impact of range modification. However, the statements are only qualitative. The EIS needs quantitative assessment of the impact and risks. The same is true about groundwater. The fact that Fort Leonard Wood is located on Karst landscape increases the uncertainties of groundwater movement.

Thanks for the opportunity to review the Draft EIS.

Yours truly,

Paul E. Albertson

Paul E. Albertson
citizen, student, and research geologist

Return address:
236 Nagogami Terrace
Rolla, MO 65401

1	I-PA.01	See response to State of Missouri, Department of Natural Resources comments numbered 3 (S-MDNR.03) and 5 (S-MDNR.05).
2	I-PA.02	Subsection 5.3.2.6 provides quantitative descriptions of the acreages potentially disturbed by the individual construction projects, and discussions of the slope and soil type that occur at each project area. Discussion of the required Operating Permits for land disturbance activities has been provided in subsection 5.3.2.10.1. The construction activities associated with the implementation of all of the alternatives will comply with the Water Pollution Control Program of the MDNR Clean Water Commission. The Corps of Engineers will require individual construction contractors to acquire a General State Operating Permit to Discharge storm water from land disturbance activities for construction sites impacting over five acres. In general, these permits are issued to implement the statewide storm water management program and reduce the need for an individual NPDES permit for each action.

3

Randy Becht

PUBLIC HEARING AND OPEN HOUSE
Fort Leonard Wood, Base Realignment and Closure Actions - 1995
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I moved to Pulaski Co. 23 years ago at the age of 15. The rivers and woods were the reason I came. Over the years much of my living was made from from the impact of Ft. Wood. I also hunted and fished on the military reservation. I came to realize the the environment and the local economy and the national defence can go hand in hand.

I believe the army has been and will be in the future, a good steward of the land.

I'm married now and have a little girl and in no way would want any harm to come to them or our beautiful environment. and I also realize how important a strong National Defence and economy are.

I've done much study on this move of the MP and chemical Schools to Ft. Wood. and I'm in total support of this move it will be good for the County State and Nation.

(additional space on the back) **>>>>**

SEND COMMENTS TO:

Mr. Alan Gehrt

US Army Corps of Engineer
Kansas City District
601 E. 12th Street
Kansas City, MO. 64106-2896

YOUR NAME:

Randy M. Becht

Organization:

Address:

H126 Hwy. Z
Devils Elbow Mo 65457

	Comment noted.

Rebecca Wright, Peter Shepley,
John Millaire, Mary Ann Mancuso,
Mary Shepley,Maureen Redig,
and Kevin Adkins
(I-RW, et al)

To: U.S. Army Corps of Engineers
Kansas City District
601 East 12th Street
Kansas City, MO 64106-2896

November 25, 1996

Attn: Mr. Alan Gehrt (MRKEP-PR)

As residents of South St. Louis, we live about 120 miles from the proposed Fort Leonard Wood Army Chemical School. We are writing to comment on the Draft Environmental Impact Statement (DEIS) on the relocation of the school to Missouri from Fort McClellan in Alabama, and to submit questions about environmental impacts that we believe are not addressed in the DEIS.

Our concerns include the chemical weapons activities (including the use and manufacture of nerve gas and the use of grenade-based systems for the release of toxic fog oil); germ warfare activities (using live biological agents and/or simulated agents); radiological training (including the licensing and potential use of unsealed radioactive materials in an outdoor alpha field); and augmented training with land mines and a wide range of weapons (including assault weapons and Uzi machine guns). Both singularly and together at the same facility, these activities are dangerous, and dangerous to us.

1. Regarding accidents:

a. Is there a safety plan that outlines the operating procedures and preventive measures designed to reduce the likelihood of accidents, such as leaks and unplanned explosions, fires, and the off-base release of hazardous materials? 1

b. In the event of an accident, is there an emergency preparedness and evacuation plan for the military base personnel and for neighboring communities? Are protective clothing, monitoring equipment, and training to be provided for local emergency responders? Are emergency medical facilities, equipment and trained personnel available nearby? 2

After reviewing the Army's eight-year-old Chemical Stockpile Emergency Preparedness Program, the U.S. General Accounting Office has determined that the "local communities near the eight chemical weapons storage sites in the United States are not fully prepared to respond to a chemical stockpile emergency, financial management is weak, and costs are growing." (Chemical Weapons Stockpile: Emergency Preparedness in Alabama Is Hampered by Management Weaknesses [re the Anniston Army Depot]. GAO/NSIAD-96-150, July 1996)

2. Regarding the disposition of wastes:

a. If no Midwest Regional Low-Level Radioactive Waste Compact disposal facility is sited and built, will the Chemical School radioactive wastes be stored on the base, and if so, where? 3

b. If no incinerator is built within the Chemical and Defense Training Facility (CDTF) compound:

(1) How will the wastes containing trace amounts of nerve agents and other toxins be stored, treated or otherwise disposed of? If the Missouri 4

Department of Natural Resources fails to permit the establishment of a hazardous waste disposal facility in Missouri and refuses to allow deep-well injection of such wastes, what alternatives is the Army considering?

(2) Is the development of a neutralization facility under consideration for the CDTF -- for example, to neutralize solid chemical weapons wastes and the highly alkaline nerve-agent waste water? 5

(3) If contaminated waste water is to be transported off-site, would it be transported as a liquid in tank trucks or be evaporated and solidified before being transported? 6

(4) What safety precautions and procedures would be put in place to protect corridor communities during the transport of the Chemical School's liquid, gaseous and solid hazardous and radioactive wastes? 7

c. Assuming off-base storage, treatment, and disposal locations are not available for the Chemical School wastes, would the Army consider building a hazardous waste incinerator within the CDTF compound or elsewhere at Fort Wood? What alternative actions would the Army take if the U.S. Environmental Protection Agency were to fail to approve the installation and operation of such an incinerator? What if the State of Missouri would fail to issue the requisite air permit for the incinerator? If an incinerator were built and malfunctioned, what interim disposal alternative would be available? 8

d. Has the design of the CDTF been finalized, including the designs of facilities to treat, store and dispose of the wastes? 9

e. What disposition is to be made of the discarded gas-mask charcoal filters that are saturated with nerve agents? Would refrigerated long-term storage be required to prevent off-gassing of the nerve agent during hot Missouri summer weather? 1(

3. Regarding fog-oil activities:

a. What precautions have been designed to reduce the likelihood that an un unexpectedly large plume of fog oil would escape off-base -- such as occurred about four years ago during preliminary fog-oil tests at Fort Wood, when the wind shifted unexpectedly, affecting visibility for drivers on nearby Interstate-44 and causing the shutdown of the highway for an hour or more? 1'

b. Would graphite particles be present in the fog oil? 1

4. Regarding Flame-Field Expedient deterrents training:

a. According to the DEIS, the exercise of creating a flaming field is designed to prevent the movement of enemy personnel in a battlefield. After the liner is spread on the ground, what fuels and other chemicals would be placed on it and then detonated (by explosives)? 1

b. Has the Army requested and received a Missouri air permit for the Flame Field gaseous and particulate (smoke) emissions? 1.

c. What is the composition of the liner? In the event of unplanned 1!

leakage of the expedient (unburned fuels) below or beyond the liner, what clean-up procedures are planned, including the remediation of potentially contaminated ground- and surface-water?

d. Where would the drums of flammable expedient and related explosives be stored? 16

5. Regarding other environmental concerns: Does the U.S. Army/Forest Service facility use agreement allow the Army troops to use the creeks within the Mark Twain National Forest as well as the land -- that is, 9672 acres, or a block of forestland almost four miles square (DEIS Vol. I, page 4-7)? Apparently amphibious vehicles from the Chemical School would be used at the eastern boundary of Fort Leonard Wood in the Big Piney River, where it flows into the Mark Twain National Forest. (Volume I, Figure 3.3) The Mark Twain National Forest is used extensively by St. Louisans for recreational purposes. 17

Because we could not locate information about the above questions in the Draft Environmental Impact Statement, we would like to request your responses (perhaps in a supplemental DEIS), and an extension of time in which to study the responses and, if necessary, to prepare additional comments or questions.

Submitted by:

Rebecca M. Wright
REBECCA M. WRIGHT
1304 South 18TH STREET
SAINT LOUIS, MISSOURI 63104

Mary Sheepley
MARY SHEEPLEY
1401 Missouri Ave
St. Louis, Mo. 63104

Peter Sheepley
Peter Sheepley
1401 MISSOURI AVE
St. Louis, MO 63104-2524

[illegible]
[illegible]
2203 Park Ave
St. Louis, Mo 63104

John P. Millaire
John P. Millaire
1304 So. 18th
St. Louis, MO 63104

Kevin L. Adkins
KEVIN L. ADKINS
2203 PARK AVE.
St. Louis, Mo 63104

Mary Ann Marcuso
MARY ANN MARCUSO
1911 Hickory
St. Louis MO 63104

1	I-RW, et al.01	Section 4.8 provides a discussion of the existing safety plans for accident avoidance and response. Subsection 5.2.2.8 has been modified to state that existing plans will be modified to reflect BRAC related missions. Subsection 5.2.2.8 has been modified to state that a Site Specific Safety Plan (SSSP) will be prepared for the operation of the proposed CDTF and must be approved by HQDA before construction can start.
2	I-RW, et al.02	Subsection 5.2.2.15.A.2 provides a discussion of local emergency preparedness and Section 4.8 discusses plans for accident avoidance and response.
3	I-RW, et al.03	See the response to comment number 16 from Ms. Kay Dray (I-KD.16).
4	I-RW, et al.04	Subsection 5.2.2.8.5 discusses waste handling and management at FLW. See response to Heartwood comment number 13 (G-Hea.13) and Ozark Chapter, Sierra Club comment number 15 (G-OCSC.15).
5	I-RW, et al.05	Subsection 5.2.2.8.5 discusses waste handling and management at FLW. See response to Heartwood comment number 13 (G-Hea.13) and Ozark Chapter, Sierra Club comment number 15 (G-OCSC.15).
6	I-RW, et al.06	As currently envisioned the liquid wastes would be transported as liquid wastes, determination of the final method for disposal of the wastes will depend upon selection from alternative technologies that are available at the time that a disposal contractor is selected. If an alternative of transporting the wastes after they have been evaporated and solidified is preferred to transportation as a liquid, then the Army could select this alternative. Subsection 5.2.2.8.5 discusses waste handling and management at FLW. See response to Heartwood comment number 13 (G-Hea.13).
7	I-RW, et al.07	Subsections 4.8.1 and 4.8.8 have been modified to describe special management procedures currently in place at FLW for the safe handling, transportation, storage and disposal of hazardous waste and radiological isotopes. Subsection 5.2.2.8.5 discusses waste handling and management at FLW. See response to Heartwood comment number 13 (G-Hea.13) and Ozark Chapter, Sierra Club comment number 15 (G-OCSC.15).
8	I-RW, et al.08	See the response to comment number 13 from Ms. Kay Dray (I-KD.13).
9	I-RW, et al.09	As discussed in subsection 2.3.5 facilities that will be required at FLW to support the proposed action have been designed concurrently with the analysis of environmental impact. The design of the CDTF will be finished in the first quarter of calendar 1997, although the design may require modification based upon the commitments made by the Army in the ROD.
10	I-RW, et al.10	Subsection 5.2.2.8.5 describes the treatment and disposal of used CDTF training garments.

I-RW, et al.11	No public roads were shut down as a result of the preliminary fog oil testing. See the response to the Environmental Protection Agency comment number 3 (F-USEPA.3).
I-RW, et al.12	See the response to the Environmental Protection Agency comment number 5 (F-USEPA.05) and Missouri Coalition for the Environment comment number 21 (G-MCE.21).
I-RW, et al.13	Subsection 3.3.3.1.3 and Table IV.2 in Volume IV provide information on the types of materials used in FFE training, while Appendix B, subsection B.2.12.4.3 provides additional information about these materials. These materials include: • fuel (gasoline), • detonating cord, • electrical blasting caps, • M4 thickening compound, • M49 trip flare, • sandbags, and • composition C4 or blocks of TNT. The quantities of these materials that will be used vary depending upon the training method selected (RCP Alternative or OPTM Alternative and EPTM Alternative) and the particular phase of FFE training being instructed.
I-RW, et al.14	FFE is a de minimis source. All de minimis sources will be evaluated during the Title V permit process. In addition, FFE training has been included in the cumulative air modeling, and the results have been incorporated into subsection 5.5 of the FEIS. Subsection 5.2.2.10.1 provides additional information regarding the air permitting process.
I-RW, et al.15	Subsection 5.2.2.5.A.5.2 has been modified to include a discussion of the liner and clean up measures.
I-RW, et al.16	Subsection 3.3.3.1.3 has been modified to clarify the storage of fuels, thickening agent and explosives used in FFE deterrent training.

Richard Walters

PUBLIC HEARING AND OPEN HOUSE
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I am writing to express the support of Sprint for moving of the military police and chemical training schools from Fort McClellan, Alabama to Fort Leonard Wood, Missouri We have supported this move from the first annoucement of this possibility - and a representative of our company has attended almost every hearing and briefing.

Our company believes that the U.S. Army been very professional in addressing all aspects of this move. The U.S. Army demonstrates a great deal of knowledge in managing environmental concerns. We are confident that the training programs involved in this expansion of Fort Leonard Wood will not have any adverse impact on the quality of life in the area.

Our observation is that the U.S. Army has done an outstanding job of protecting the environment. On behalf of my employer, Sprint, I confidently endorse the move of the Military Police and Chemical training schools to Fort Leonard Wood, Missouri. And, I applaud the open, neutral, and unbiased manner in which information has been provided.

(additional space on the back) >>>>

SEND COMMENTS TO:

Mr. Alan Gehrt

US Army Corps of Engineer
Kansas City District
601 E. 12th Street
Kansas City, MO. 64106-2896

YOUR NAME:
Richard Walters, Public Relations Mgr

Organization:
Sprint

Address:
P.O. Box 689
Jefferson City MO 65102

	Comment noted.

Rick LaMonica
(I-RL)

PUBLIC HEARING AND OPEN HOUSE
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The Defense Dept has created some of the most highly contaminated sites in our country on various military bases during routine military operations. This gives me little confidence that a chemical & biological training school at Fort Leonard Wood will not be more concerned with getting students through the courses and ignore wastes generated and how these toxic materials are transported, treated or disposed off the base. 1

(additional space on the back) >>>>

SEND COMMENTS TO:

Mr. Alan Gehrt

US Army Corps of Engineer
Kansas City District
601 E. 12th Street
Kansas City, MO. 64106-2896

YOUR NAME:

Rick LaMonica

Organization:

Address:
703 Crompton Ct
Crestwood, MO 63126

I-RL.01	The Army must follow the more stringent of either Federal, state, local or Army regulations in disposing of all regulated wastes. Subsection 4.8 describes current programs that are in place at FLW that ensure compliance with all applicable waste disposal regulations.

Rick Wilson

PUBLIC HEARING AND OPEN HOUSE
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I believe that the realignment would have great economic impact on the communities surrounding Ft Leonard Wood. It would benefit not only Waynesville / St Robert area but also the surrounding towns and cities with promoting industry and more jobs in an area which seems to be stunted. There is more than enough room with all the acres Ft Leonard Wood owns, that the controlled effects of the chemical schools to be to a minimum risk of danger. There is more than enough room for the surrounding areas to grow with the impact of the move. This move would prove nothing more than a great thing for everybody.

(additional space on the back) **>>>>**

SEND COMMENTS TO:

Mr. Alan Gehrt

US Army Corps of Engineer
Kansas City District
601 E. 12th Street
Kansas City, MO. 64106-2896

YOUR NAME:

Rick Wilson

Organization:
Sellers - Sexton Inc.

Address:
P.O. Box K
Waynesville Mo 65583

	Comment noted.

Robert Swick

PUBLIC HEARING AND OPEN HOUSE
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I have been a resident of this area for 30 years and live within 20 miles of the Base's western boundary.

For most of the time that I have lived here I have used the post property as a recreation facility. My main form of relaxation is going horseback riding or camping on weekends. The post property has provided an excellent location on which to enjoy these activities.

I have followed the proposed move of the two above mentioned schools and sought out independent opinions of what might be negative effects on the proposed areas and the impact on my personal recreational activities.

So far nothing had been brought to my attention to cause me any major concern or fear.

I wish to lend my support to the proposed moves and the positive effects they will have for the immediate area, both short and long term.

I appreciate the military effort to consolidate for economy's sake.

(additional space on the back) >>>>

SEND COMMENTS TO:

Mr. Alan Gehrt

US Army Corps of Engineer
Kansas City District
601 E. 12th Street
Kansas City, MO. 64106-2896

YOUR NAME:

Robert E. Swick

Organization:

Waynesville R-6 School

Address:

14505 Tatt Lane
Waynesville Missouri 65583

	Comment noted.

Roy Teal Jr.

PUBLIC HEARING AND OPEN HOUSE
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We at Coldwell Banker do support the move and look forward to great new things to happen to the surrounding community. Thanks for answering questions and for a great display.

Sincerely,
Roy C. Teal

(additional space on the back) >>>>

SEND COMMENTS TO:

Mr. Alan Gehrt

US Army Corps of Engineer
Kansas City District
601 E. 12th Street
Kansas City, MO. 64106-2896

YOUR NAME:

Roy A. Teal Jr.

Organization:
Coldwell Banker Alco Realty

Address:
920 Missouri Ave
Waynesville, MO 65583

	Comment noted.

Stephen Fraley
(I-SF)

12287 Country Club Drive
Rolla, MO 65401
October 19, 1996

Mr. Alan Gehrt
U.S. Army Corps of Engineers
Kansas City District
601 E. 12th Street
Kansas City, MO 64106-2896

Dear Mr. Gehrt,

The purpose of this letter is to provide comments on the Draft Environmental Impact Statement (EIS) issued for the relocation of the U.S. Army Chemical School, and the U.S. Army Military Police School, to Fort Leonard Wood, Missouri. Specifically, there is a basis for continued concern regarding the impact of smoke training and the flame training.

The fog oil and flame training could continue to be a potential threat to the ground water. Previous experience at Fort McClellan is used as much of the basis for regarding this as a minor consequence. However, conditions at Fort Leonard Wood are considerably different, principally in the types of soils and the climatic conditions. These conditions affect the inherent remediation factors that protect the ground water. Remediation factors that are operative at Fort McClellan work differently, and in different cycles, at Fort Leonard Wood. They will only work if they are given the chance to function properly. Based on the current proposals, specific recommendations are as follows: 1

1. It would be prudent to start training slowly, and require intensive monitoring of the buildup of some of the specific constituent compounds of the oil, thickened fuel, and decomposition products in the soil, plants, and shallow water table. The training schedule may need to be adjusted so as to not overtax the remediation cycle. Monitoring will be necessary to determine when these adjustments would be necessary. 2

2. Oil and its decomposition products have a tendency to become embedded in clays when exposed to high heat. This could allow buildup of the residue where it might not be treated. The design of the protected flame training area should take this into account. 3

3. Monitoring of the output from springs and deep wells is unlikely to provide timely warning of potential problems. Shallow aquifers in the vicinity should be monitored for some of the specific constituent compounds of the oil and its decomposition products. At the very least, this should be done before training commences so that a "ground truth" reference is available for comparison purposes. 4

The draft EIS contains proposals that are improved from the original concept of operations. However, additional steps are necessary. It must be realized that it will likely take 10 to 20 years for problems to show up that have a significant impact, if they are going to occur. If allowed to develop, it could take just as long to isolate and correct these problems.

Sincerely,

Stephen R. Fraley

Stephen R. Fraley

1	I-SF.01	See response to State of Missouri, Department of Natural Resources comment number 3 (S-MDNR.03); and the response to comment number 14 from Rebecca White, Peter Shepley, John Millaire, Mary Ann Mancuso, Mary Shepley and Maureen Redig, and Kevin Atkins (I-RW, et al.14).
2	I-SF.02	Training cannot be started slowly, since it must be conducted as it is scheduled to accommodate the missions of the relocated schools. The Army has committed to an ongoing monitoring plan (see Volume III, Appendix K). Also see response to State of Missouri, Department of Natural Resources comment number 3 (S-MDNR.03).
3	I-SF.03	See response to State of Missouri, Department of Natural Resources comment number 3 (S-MDNR.03). Subsections 5.2.2.5.A.5.2, 5.2.2.5.B.2, and 5.2.2.6.2 provide a discussion of microbial degradation of fuels, and the design of the FFE deterrent training area including planned construction of an impervious liner under the entire flame field training area and surface water control features as part of the OPTM and EPTM alternatives.
4	I-SF.04	It is anticipated that a buildup of contaminants in soil or surface water would occur before groundwater could be affected. Soil and surface water sampling listed in Vol. III, Appendix H (current monitoring programs at FLW) and Vol. III, Appendix K (BRAC monitoring program summary) will provide timely warning of any buildup of the constituent compounds and degradation products in the soil and in surface water. As outlined in the referenced appendices, some of this monitoring is currently being performed as part of the ongoing operations at FLW, and parts of the BRAC action monitoring program will be accomplished a minimum of one year prior to the start of training.

5

Thomas M. Julian Jr

PUBLIC HEARING AND OPEN HOUSE
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I AM 100% IN FAVOR OF THE MOVE OF THE CHEMICAL AND MP SCHOOL TO FORT LEONARD WOOD MO. BOTH IN REGARDS TO THE ENVIRONMENT & ECONOMY. THE OFFICIALS AT FORT LEONARD WOOD HAVE BEEN VERY HONEST & OPEN ABOUT WHAT THE IMPACT TO THE AREA WOULD AND WOULD NOT BE ON THE SURROUNDING AREA. I ALSO BELIEVE THAT ALL PRECAUTIONS WOULD BE TAKEN TO PREVENT ANY POSSIBLE PROBLEMS THAT I CAN FORESEE. THIS MOVE IS LONG OVER DUE AND WILL NOT ONLY BENEFIT THE INSTALLATION FINANCIALLY SINCE ALL SERVICES ARE TRAINING HERE.

(additional space on the back) **>>>>**

SEND COMMENTS TO:

Mr. Alan Gehrt

US Army Corps of Engineer
Kansas City District
601 E. 12th Street
Kansas City, MO. 64106-2896

YOUR NAME:

THOMAS M. JULIAN JR.

Organization:

Address:
25800 ROCKY MOUNT LANE
LOAYNESVILLE MO 65583

	Comment noted.

Tom Rackers

PUBLIC HEARING AND OPEN HOUSE
Fort Leonard Wood, Base Realignment and Closure Actions - 1995
COMMENT SHEET

If you are interested in providing comments concerning the Draft Environmental Impact Statement for the realignment of the US Army Military Police School and US Army Chemical School to Fort Leonard Wood, please provide your written comments below and send to the address noted, or leave this form in the designated location at the November 14, 1996 Public Hearing and Open House.

as a employee of the Sprint Cooperation I would like to voice support of moving the military police and chemical schools from Fort McClellan Alabama to Fort Leonard Wood MO. Sprint representatives have ben involved with the process from the beginning. A company representative has attended most of the hearings and briefings and I have been involved, to some extent from the beginning. Through our involment and association with the U.S army and through the proces we feel confident the army is doing everything necessary to protect the environment. We are confident the training involved will not have any adverse affect on the quality of life. Our observation is the army has done a outstanding job of protecting the environment, therefore we at Sprint would heartidly endorse the move of the chemical and military police school.

(additional space on the back) >>>>

SEND COMMENTS TO:

Mr. Alan Gehrt

US Army Corps of Engineer
Kansas City District
601 E. 12th Street
Kansas City, MO. 64106-2896

YOUR NAME:
TOM RACKERS
Thomas P. Rackers

Organization:
Sprint

Address:
P.O. BOX 689
JEFFERSON CITY, MO.

	Comment noted.

Tom Sager
(I-TS)

Tom Sager
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Rolla, MO. 65401
phone: 314-368-5551 (home)
phone: 314-341-4856 (office)
email: tomsager@cs.umr.edu

November 24, 1996

U.S. Army Corps of Engineers
Kansas City District
601 East 12th St.
Kansas City, MO 64106-2896
attn: Mr. Alan Gehret [MRKEP-PR]

Re: Comments on the Draft Environmental Impact Statement for the Proposed Move of Army Chemical School to Fort Leonard Wood.

Dear Mr. Gehret:

My name is Tom Sager. I live less than 30 miles from Fort Leonard Wood in Rolla, Missouri. I am a member of the Rolla Peace Issues Group, Heartwood and the Sierra Club. I am concerned about the proposed move of the U.S. Army Chemical and Military Police Schools to Fort Leonard Wood, both as an individual and as a member of Rolla Peace Issues Group, Heartwood, and the Sierra Club. I would like to receive a copy of the full EIS when available. I also express some of my concerns below.

First I am concerned about the slip-shod job of preparing the Draft Environmental Impact Statement (DEIS) that was done by Harlan Bartholomew and Associates. Many of the concerns which I addressed to Harlan Bartholomew and Associates almost one year ago were not considered in the DEIS.

I am also concerned that the time allowed for response to the DEIS is far too short. Consider that Harlan Bartholomew with a large staff of full time analysts took 10 months to prepare the DEIS, running approximately 3 months over the original time estimate. Yet, the public, most of which have full time jobs that do not involve the Relocation of the Chemical and Military Police Schools, are expected to respond to these voluminous reports in a mere 45 days. It would seem only fair to give the public at least the same 3 month extension to reply to the DEIS that was given to Harlan Bartholomew to prepare the DEIS. The failure to give an extension to the public is further evidence that public input is neither desired nor seriously considered when offered. 1

It is known that the nerve toxins, VX and Sarin are among the most toxic substances known to man. One drop can kill. The one quart which the

Army proposes to store at Fort Leonard Wood could kill over 100 thousand people, more people than live in the region. The Army has had numerous accidents with nerve toxins. The Army has tried to cover up disasters with nerve toxins. The Army knew that our troops were exposed to nerve toxins during the Gulf War of 1991, yet hid the fact until very recently. Nerve toxins are thought by many to be the cause of Gulf War Syndrome. It is known from the Great Utah Sheep Kill of 1967 in which VX toxin traveled 27 miles in the wind and precipitated out in quantities strong enough to kill over 6000 sheep, that these chemicals can exist in the atmosphere for extended periods of time and still retain their toxicity. Yet despite all this the DEIS argues that if the containment facility were breached, the nerve toxin would cause little or no damage to the health of the population outside the containment area. Ridiculous! An accident at the containment facility during live nerve toxin training could easily cost thousands of lives. 3

There are numerous alternatives to training with live nerve toxins at Fort Leonard Wood which were not considered in the DEIS.

Trainees could be shipped out to a desert base for live nerve toxin training. Since there are already containment facilities at places such as Dugway Proving Grounds where research on nerve toxins has been going on for years, this option might actually save money. However, it was not even considered in the DEIS. 4

Furthermore, no valid argument has ever been given as to why simulants can't be used in training just as effectively as the actual toxin. Since the trainee must be very careful not to come in contact with the substance during training, how would the trainee know whether he is training with a simulant or the real toxin anyway? 5

The two methods could actually be combined very effectively. For example the top x% could be rewarded for their high performance by being shipped to the desert to train with live toxins while the others would train with simulants at Fort Leonard Wood.

The manufacture, transportation, storage and disposal of nerve toxins are also unanswered problems. Will nerve toxins be manufactured at Fort Leonard Wood or shipped to Fort Leonard Wood? How can one evaluate the hazards involved without an answer to this question? If it is manufactured, how does one avoid turning Fort Leonard Wood into a wasteland like the Rocky Flats Facility which was called by a former base commander the "most toxic square mile on Earth." If they are shipped (presumably in binary form) what precautions will be taken to avoid an accident? What is the toxicity of the binary agents? It is my understanding that some binary agents are almost as toxic as the unary agents. Which ones will be shipped and what is their toxicity? 6 7 8 9 10

How will the nerve toxins be disposed of? It is unclear from the DEIS whether they will be incinerated or transported elsewhere. If they are incinerated, how will the many problems with other Army incinerators such as Johnson Island 11 12

or the Toelle Facility be avoided? If they will be shipped, where to and how will they be disposed of there? Saying a licensed disposal contractor will be hired, begs the question. I would like to see a specific plan and then I would like a chance for the public to study the plan and comment on it before proceeding. 13 14

I also have concerns about Biological and Nuclear training. Which live organisms will be used? How can we be sure that an incident like the Serratia poisoning that occurred in San Francisco due to Army tests in the 1960's will not occur at Fort Leonard Wood? Why is this question not addressed in the DEIS? 15

How about radioisotopes? Which ones will be used in training? How will they be disposed of? Where will they be shipped to, or will they be stored on base? If so for how long? 16

How about the quantities of fog oil? It seems that the Army isn't sure how much it wants to use. Even if the amount they use is below the critical level, how about the fog oil in conjunction with all the other petroleum based compounds used at Fort Leonard Wood and nearby population centers? Might that not be above the critical level where significant environmental deterioration begins to occur? The question of synergistic effects is also important and should be considered. How do we know that two substances relatively harmless by themselves will not prove devastating when used together. This subject is not addressed in the DEIS. 17 18

To sum up. Harlan Bartholomew has done a slip-shod job producing the DEIS. Far too many important questions are unanswered or just passed over as unimportant. In addition, the public has not been given adequate time to study and respond to this document. I strongly recommend that further study be given to the subject of moving the Chemical Defense Training Facility to Fort Leonard Wood. I suggest that a new study team be formed and that it include representatives of Missouri environmental non-governmental organizations such as the Sierra Club, Heartwood and the St. Louis Coalition for the Environment. 19

Sincerely yours,

Tom Sager

Tom Sager

1	I-TS.01	See the response to Heartwood comment 1 (G-Hea.01).
2	I-TS.02	See response to Tom Sager's verbal comments (Trans-TS.02).
3	I-TS.03	See response to Tom Sager's verbal comments (Trans-TS.03).
4	I-TS.04	See response to Tom Sager's verbal comments (Trans-TS.04).
5	I-TS.05	Subsection 3.3.3.6.3 and Volume IV, Table IV.1 include discussions concerning the potential of using simulated toxic agents at the CDTF. Although simulated agents are used in other training, the primary purpose of this training is to build confidence in individual Chemical Specialists that their skills and their personnel protective equipment will protect them. Consequently, the training must be accomplished with toxic agents. Also, the BRAC decision mandates the construction and operation of a CDTF at FLW be accomplished before ceasing operations of the FMC CDTF.
6	I-TS.06	As discussed in subsection 5.2.2.8.5, binary components will be combined (within the highly controlled environment of CDTF) to form toxic agents at FLW. The quantify of toxic agents to be mixed and stored at FLW will be strictly limited to those amounts authorized and required to support agent detection and decontamination training at the CDTF. Based on established Standard Operating Procedures, the quantity of agent stored at the CDTF will be less than that authorized in the Chemical Weapons Convention.
7	I-TS.07	Subsection 5.2.2.8.5 has been modified to include additional information concerning the disposal of hazardous, infectious and special waste.
8	I-TS.08	The discussion in subsection 5.2.2.8.5 has been modified to include additional information on the transportation of binary components to the CDTF. These shipments will also follow the safety requirements delineated by AR 50-6, AR 740-32, and CDTF Standard Operating Procedures.
9	I-TS.09	See response to Heartwood comment number 11 (G-Hea.11).
10	I-TS.10	See response to Heartwood comment number 11 (G-Hea.11).
11	I-TS.11	Toxic agents used in training at the CDTF will be decontaminated in specifically designed and constructed training bays as part of the training effort. Subsection 5.2.2.8.5 discusses waste handling and management at FLW. See discussion in response to Heartwood comment number 13 (G-Hea.13) and Ozark Chapter, Sierra Club comment number 15 (G-OCSC.15).
12	I-TS.12	The Army is not proposing the use of a thermal treatment unit on-site for the disposal of decontaminated waste by-products from the CDTF. See discussion in response to Heartwood comment number 13 (G-Hea.13) and Ozark Chapter, Sierra Club comment number 15 (G-OCSC.15). Decontaminated waste by-products will be disposed of as discussed in subsection 5.2.2.8.5.
13	I-TS.13	Decontaminated waste by-products will be disposed of as discussed in subsection 5.2.2.8.5. See the discussion in response to Heartwood comment number 13 (G-Hea.13) and Ozark Chapter, Sierra Club comment number 15 (G-OCSC.15) for additional information.

I-TS.14	Decontaminated waste by-products will be disposed of as discussed in subsection 5.2.2.8.5. See the discussion in response to Heartwood comment number 13 (Ghea.13) and Ozark Chapter, Sierra Club comment number 15 (G-OCSC.15) for additional information.
I-TS.15	Subsection 3.3.3.2 and subsection B.2.12 of Appendix B in Volume III provide information on the types of materials that will be used to simulate biological agents. Appendix B also contains additional information on the quantities of these items that will be used, and the potential health and safety issues associated with their use. As discussed in these subsections, biological materials that will be used to simulate biological agents include: 1) *Bacillus subtilus* var. niger (BG) is described as a harmless and non-pathogenic bacteria by the Center for Disease Control and the National Institute of Health. 2) Kaolin Dust is a non-toxic nuisance dust which is a constituent of china clay. 3) Male specific (MS2) Coliphage is a virus which infects only certain strains of *E. coli* bacteria. These bacteria are found regularly in the environment, as well as in wastewater treatment facilities. 4) *Erwinia herbicola* is a non-pathogenic bacteria which reduces the incidence of fire blight in fruit trees. 5) Ovalbumin is a protein associated with egg whites. This document is concerned with the relocation of the US Army Military Police School and the US Army Chemical School from FMC to FLW. An incident like the Serratia poisoning that occurred in San Francisco is unrelated to the proposed action.
I-TS.16	Appendix B in Volume III provides a listing of radiological isotopes that will be used in training. This discussion and the discussion in subsection 5.2.2.8.4 have been modified to provide a more thorough discussion concerning the long-term storage and disposal of radiological isotopes.
I-TS.17	See subsections 5.2.2.3, 5.2.2.5, 5.2.2.6, 5.2.2.11, and 5.2.2.15 for information on the effects of fog oil on human health and the environment. A thorough review of the literature on the fate and effects of fog oil and mineral oils like fog oil in combination with fog oil studies conducted as part of this FEIS, indicate significant environmental degradation will not occur from proposed fog oil training at FLW. The basis for this conclusion is: 1) fog oil has very low inhalation, ingestion and dermal toxicity as demonstrated by studies using both chronic and acute exposures; 2) fog oil compounds were not found to accumulate in water, sediments, and tissues of plants and animals which were sampled from a fog oil training area at FMC which had been in use for over 10 years; 3) none of the compounds in fog oil have been shown to biomagnify; and 4) deposition of fog oil droplets making up the obscurant cloud is very slight and evidence indicates degradation rates exceed deposition rates.

1	I-TS.17 (cont.)	Background levels of over 80 different petroleum compounds were analyzed by the Army in the ambient air at Aberdeen Proving Ground, Edgewood, Maryland. Among the compounds analyzed were those considered by USEPA as compounds of human and environmental health concern in petroleum products. As expected, the total background concentration of all compounds analyzed was very low at about 20 $\mu g/m^3$. The background measured at Aberdeen Proving Ground is expected to be higher than FLW due mainly to the much larger population density in the Edgewood area and the greater number of petroleum hydrocarbon sources at Edgewood as compared to FLW. This background is 250 times lower than the safe fog oil inhalation concentration of 5 mg/m^3. The actual exposure levels of fog oil to the general public are expected to be hundreds of times lower than fog oil concentrations already considered safe. This indicates that background hydrocarbons anticipated from the FLW community represent an insignificant exposure, and when added to projected exposures from fog oil training, the combined sources will still be far below those concentrations already considered safe to the environment and humans. Fort Leonard Wood area is in attainment for NAAQS and Missouri air quality standards. These standards have been set to protect human health. The Clean Air Act contains provisions which insure that areas which are in attainment for air quality, cannot be degraded below ambient air quality standards. Adherence to this CAA provision will effectively protect environmental and human health by not allowing deterioration of air quality. This again supports the conclusion that critical levels of fog oil in combination with other oils, will not be reached and that the environment will not be degraded. This response to the concern about reaching critical levels of fog oil has assumed environmental health and human health are related to air quality because the main exposure pathway for fog oil is through the inhalation route for animals. For plants, the exposure route would be from deposition onto leaf surfaces, but as discussed at subsection 5.2.2.11.B.4, the deposition of fog oil is too low to impact non-Threatened and Endangered (T&E) species (including plants).
2	I-TS.18	Synergistic effects of different substances used in training at FLW are not anticipated. The main reason for this conclusion is that multiple chemical exposures which may cause synergistic or additive effects are unlikely. The environmental and human health evaluations found in subsections 5.2.2.3, 5.2.2.5, 5.2.2.6, 5.2.2.11, and 5.2.2.15 of the FEIS document that live agent training, BIDS and Fox training, and radiation training involve controlled and safe use of materials which are handled to minimize exposure to the environment and humans. Fog oil represents the primary material to which humans and the environment are exposed. The synergistic effects of other training materials with fog oil smoke are not anticipated because the human and environmental exposures (measured by duration, frequency and concentration) to materials other than fog oil are so small as to represent no effects even in combination with fog oil. The response to comment I-TS.20 (concerning fog oil and petroleum) addresses reasons why adverse effects are not anticipated from fog oil training.

I-TS.19	BRAC legislation mandates that the Chemical Defense Training Facility (CDTF) will operate at Fort McClellan until such time as the capability to operate a replacement facility at Fort Leonard Wood is achieved. The study team which prepared the EIS was chosen for its expertise in planning and environmental issues. Input from concerned citizens, groups, and regulatory agencies was solicited during the Open House Scoping Meeting and through written comments received during the scoping period. In addition to these required actions the study team expanded their Public Involvement effort to include numerous meetings and briefings designed to expand the amount of interaction and involvement of the community in defining the scope of the study. Elements of this additional effort included: • a series of Town Hall Meetings in the area surrounding the installation; • a total of eight Agency Coordination meetings; • two newsletters to the approximately 700 individuals and groups on the project mailing list; and • two Special Interest Group Meetings in which representative from the 17 special interest groups that had expressed interest in the proposed action were invited to exchange details of the planned action, the alternatives to be evaluated in the EIS and other areas of concern. Together these additional meetings provided an opportunity for all individuals to participate in the EIS process.

Virgil Flanigan

PUBLIC HEARING AND OPEN HOUSE
Fort Leonard Wood, Base Realignment and Closure Actions - 1995
COMMENT SHEET

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I have worked with the engineering groups at Fort Leonard Wood for the past 20 years. We have worked on many problems including environmental cleanup. I believe the groups to be well trained and competent. I believe they are good stewards and will address any existing or arising problems with that experience and confidence. I recommend the move and development for Fort Wood

(additional space on the back) **>>>>**

SEND COMMENTS TO:

Mr. Alan Gehrt

US Army Corps of Engineer
Kansas City District
601 E. 12th Street
Kansas City, MO. 64106-2896

YOUR NAME:

Prof Virgil Flanigan

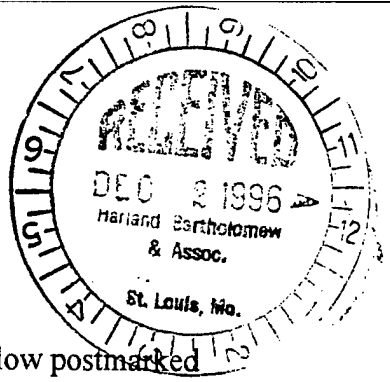
Organization:
Sr. Res. Center for Env Sc & Tech

Address:
UN. Mo Rolla 222 ERL
Rolla Mo 65401

573-341-4612

	Comment noted.

Wendy Pelton
(I-WP)



RE: DEIS for Army Chemical School transfer to Ft. Wood

Dear HARLAND BARTHOLOMEW & ASSOCIATES:

I am E-Mailing my comments on 11/25/96, with a written copy to follow postmarked 11/26/96, because ice and sleet on our roads make it unlikely that my kids & I will make it to town today.

Thank you so much for sending me copies of the significant parts of the DEIS. As you may have noticed they were l-o-n-g, so I have not had the opportunity to read more than a small % of it. Homeschooling leaves me little more time for reading than the average working parent has. I would have appreciated having more time before the closing of the comment period, but it is obvious why the Army would have refused it, as they/you refused an extension to the Sierra Club. I am disappointed in that decision, because I count on their (Sierra Club's) experience & expertise in deciphering EIS's, and yet they really didn't get the opportunity to study this one thoroughly. This seems a sabotage of the EIS system.

The DEIS appeared to be thorough for the most part, but it was difficult for the average person to understand, as well as to get through, undoubtedly discouraging responses from the average citizen. I thought EIS's were supposed to be designed to *encourage* participation by concerned citizens. Of course, it may be to the Army's benefit that we average folk not really grasp what this transfer means for the environment. 1

I wish that the U.S. Fish & Wildlife Service Biological Opinion had been included in the DEIS packet. Surely, they are a well-informed & concerned resource. Have they & other State & Federal Agencies been encouraged or discouraged by H B & Assoc, the Army, & the Missouri Politicians? There are unpleasant rumors flying. I hope that you & the Army use **every** available knowledgable resource to create this EIS, because it is your job, and because the Citizens and the Environment deserve it.

From what I could understand of the Matrixes, it seems that there will likely be harm to Threatened & Endangered Species, other protected species, and less often to wet land, aquatic resources and terrestrial resources, no matter which alternative is used. This suggests to me that either the NO Action alternative (forget a transfer to the Ozarks) needs to be more seriously considered, **or** housing ***all*** of the obscurant, flame training, smoke pots, TPA grenades, etc, in a double-walled, negative-pressure containment building needs to be offered as an alternative. In my opinion, 65,000 gallons of fog oil was 65,000 too much, so you can imagine what I think about 85,000 gallons of the stuff, especially when added to all the other pollutants brought with Chemical training. 2

The testing of Fog Oil impacts sound faulty and inadequate. I am also concerned that you have not accounted for the impact of fog oil ***in combination*** with all the other chemical school emissions, Ft. Wood current emissions, and new non-military community emissions, ***over a long period*** of time. Think of how many **years** of exposure 3

down-winders of human, plant & animal varieties can look forward to if this transfer is permitted.

Also, monitoring *selected* species doesn't assure me of the safety or negative impacts that "unselected" species might experience from Chemical Training exercises. Why were the species identified by the Sierra Club as of concern, especially hawks & neotropical migrants, not evaluated in the DEIS or BA? 4

No doubt it is against the rules, but I may be sending additional comments as I crawl through this long document. If you throw them in the wastebasket, as the Army would love you to, it will be the EIS's loss, the Citizen's loss, and the environment's loss. But considering that the Army considers all three nothing more than annoying impediments to their grand plan, I imagine that they will fund a very large wastebasket for your continuing work on the EIS.

I am impressed with the terrific amount of work you have done. I found it informative, where I could understand it. Keep up the good work. Perhaps you will be able to contribute to the protection of our state's most valuable resource -- the Ozarks.

Sincerely,

Wendy Pelton

Wendy Pelton
(new address)
Route 2
Box 108
Bourbon, MO 65441

I-WP.01	See the response to Ozark Chapter Sierra Club comment number 7 (G-OCSC.07).
I-WP.02	See response to Heartwood comment number 2 (G-Hea.02).
I-WP.03	As described in the analysis of training alternatives located in Volume IV, a series of training alternatives were considered for accomplishing the individual training goals associated with the relocation of the US Army Military Police School and Chemical School missions to FLW. As illustrated in the discussion of Training Goal 7.2 (alternate 8) consideration was given to conducting Static Obscurant Training in an interior environment. This training alternative was eliminated as not reasonable. The use of obscurants, smoke pots and smoke grenades in other training goals are used to augment personnel and vehicle maneuver operations. FFE deterrent training includes the explosion of up C4 or TNT explosives and up to 900 gallons of thickened gasoline (depending upon the alternative considered). Conducting these operations in an interior environment is non-viable due to safety concerns for the student and staff involved in the training, and do to the scale of these training operations.
I-WP.04	Subsection 5.5 of the EIS has been reorganized and modified to clarify the potential for cumulative impacts.
I-WP.05	See response to Ozark Chapter, Sierra Club comment number 46 (G-OCSC.46).