

C3, TC 5-400

Change 3

Headquarters
Department of the Army
Washington, DC,

Unit Leaders' Handbook for Environmental Stewardship

1. Change TC 5-400, 29 September 1994, as follows:

Remove Old Pages

i through iv
5-1 through 5-16

Glossary-1 through
Glossary-11

Insert New Pages

i through iv
5-1 through 5-13
F-1 through F-12
Glossary-1 through Glossary-13

Sample risk-management work
sheet

2. A bar (l) marks new or changed material.
3. File this transmittal sheet in front of the publication.

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**UNIT LEADERS' HANDBOOK
FOR
ENVIRONMENTAL STEWARDSHIP**

Table of Contents

	Page
PREFACE	v
INTRODUCTION	vi
CHAPTER 1 ARMY ENVIRONMENTAL STRATEGY	
1-1. Background	1-1
1-2. Army Environmental Ethic	1-3
1-3. Strategy	1-3
1-4. Environmental Model	1-4
1-5. Goals and Policies	1-6
CHAPTER 2 ENVIRONMENTAL LAWS AND THE UNIT	
2-1. Sources of Environmental Laws and Regulations	2-1
2-2. Key Environmental Laws and Regulations	2-2
2-3. Environmental Penalties	2-8
CHAPTER 3 DUTIES AND RESPONSIBILITIES	
3-1. Soldiers	3-1
3-2. Unit Noncommissioned Officers	3-2
3-3. Unit Officers	3-3
3-4. Unit Commanders	3-4

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C3. TC 5-400

	Page
CHAPTER 4	UNIT-LEVEL ENVIRONMENTAL PROGRAMS
4-1. Unit-Level Programs	4-1
4-2. Training Requirements	4-10
4-3. Sources of Environmental Training.....	4-11
4-4. Program Assessment	4-12
CHAPTER 5	RISK MANAGEMENT DURING UNIT TRAINING AND MILITARY OPERATIONS
5-1. Background	5-1
5-2. Legal and Regulatory Responsibilities	5-2
5-3. Risk-Management Principles.....	5-3
5-4. Environmental Benefits of Risk Management	5-3
5-5. The Risk-Management Process	5-3
5-6. Summary	5-13
CHAPTER 6	INSTALLATION SUPPORT
6-1. Installation Organizations.....	6-1
6-2. Environmental Quality-Control Committee (EQCC)	6-5
6-3. Points of Contact	6-5
APPENDIX A	ENVIRONMENTAL LAWS AND REGULATIONS
A-1. AR 200-1	A-1
A-2. AR 200-2	A-1
A-3. AR 420-40	A-2
A-4. AR 420-47	A-2
A-5. AR 420-74	A-2
A-6. AR 420-76	A-2
A-7. Archeological Resources Preservation Act (ARPA)	A-2
A-8. Asbestos Hazard Emergency Response Act	A-2
A-9. Clean Air Act.....	A-3
A-10. Clean Water Act.....	A-3
A-11. Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)	A-4

Page

A-12. Emergency Planning and Community Right-to-Know Act	A-4
A-13. Endangered Species Act	A-5
A-14. Executive Order 11989	A-5
A-15. Executive Order 11990	A-5
A-16. Executive Order 12088	A-5
A-17. Executive Order 12114	A-5
A-18. Executive Order 12580	A-6
A-19. Executive Order 12856	A-6
A-20. Executive Order 12873	A-6
A-21. Federal Facilities Compliance Act	A-6
A-22. Federal Insecticide, Fungicide, and Rodenticide Act	A-7
A-23. Freedom of Information Act (FOIA)	A-7
A-24. Historic and Archeological Data Preservation Act	A-7
A-25. Lead Contamination Control Act	A-7
A-26. Marine Mammal Protection Act (MMPA)	A-7
A-27. National Environmental Policy Act	A-7
A-28. National Historic Preservation Act	A-8
A-29. Native American Grave Protection and Repatriation Act	A-8
A-30. Noise Control Act	A-8
A-31. Occupational Safety and Health Act	A-9
A-32. Quiet Communities Act	A-9
A-33. Resource Conservation and Recovery Act	A-9
A-34. Safe Drinking Water Act	A-9
A-35. Sikes Act	A-10
A-36. Toxic Substances Control Act (TSCA)	A-10

APPENDIX B SAMPLE HAZARDOUS MATERIALS AND
WASTE MANAGEMENT APPENDIX TO UNIT
MAINTENANCE SOP

APPENDIX C UNIT ENVIRONMENTAL SELF-ASSESSMENT

APPENDIX D MATERIAL SAFETY DATA SHEET

APPENDIX E UNIT LEADERS METT-T ENVIRONMENTAL RISK-
REDUCTION MEASURES

C3. TC 5-400

	Page
APPENDIX F RISK-MANAGEMENT ASSESSMENT PROCESS	
F-1. Risk-Management Work Sheet.....	F-1
F-2. Practical Application of Assessing Environmental- Related risk.....	F-1
F-3. Summary	F-6
APPENDIX G ENVIRONMENTAL INFORMATION HOTLINES	
GLOSSARY	Glossary-1
REFERENCES	References-1
INDEX.....	Index-1

CHAPTER 5
ENVIRONMENTAL-RISK MANAGEMENT

	Page
Background	5-1
Legal and Regulatory Responsibilities	5-2
Risk-Management Principles	5-3
Environmental Benefits of Risk Management	5-3
The Risk-Management Process	5-3
Summary	5-13

Each day, commanders make decisions affecting the environment. These decisions affect resources entrusted to the Army. These decisions also have serious environmental and legal consequences for decision makers. The military's inherent responsibility to the nation is to protect and preserve its resources—a responsibility that resides at all levels. Risk management is an effective process to assist in preserving these resources. Unit leaders identify actions that may negatively impact the environment and take appropriate steps to prevent or mitigate damage.

5-1. Purpose. This chapter shows how to use the risk-management process of assessing and managing. It concentrates specifically on environmental-related risk; however, these risks would be incorporated into a company's overall risk-management plan. When assessing hazardous risks in operations, a commander and his staff must look at two types of risk:

- Tactical risk—is concerned with hazards that exist because of the presence of either an enemy or an adversary. It applies to all levels of war and across the spectrum of operations.
- Accidental risk—includes all operational-risk considerations other than tactical risk. It includes risk to friendly forces and the risk posed to civilians by an operation, as well as the impact of operations on the environment. Accidental risk can include activities associated with hazards concerning friendly personnel, civilians, equipment readiness, and environmental conditions.

Tactical and accident risks may be diametrically opposed. A commander may choose to accept a high level of environmental-related accident risk to reduce the overall tactical risk. For example, he may decide to destroy an enemy's petroleum storage area to reduce his overall tactical risk. Figure 5-1 shows the relationship of environmental hazards to the total risk-management process.

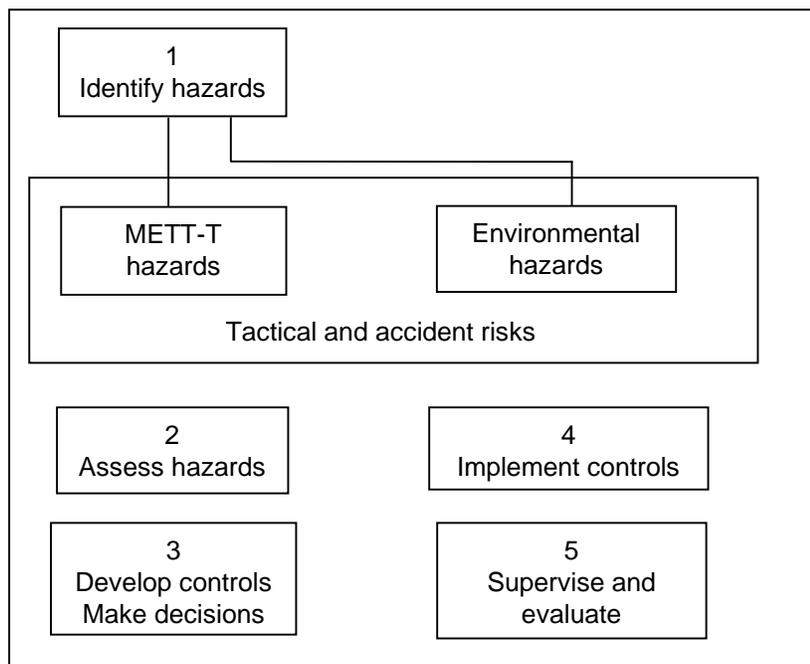


Figure 5-1. Environmental hazard relationship to the risk-management process

5-2. Legal and Regulatory Responsibilities. Risk management does not convey authority to deliberately disobey local, state, national, or HN laws and regulations. It does not justify ignoring regulatory restrictions and applicable standards, nor does it justify bypassing risk controls required by law. Examples include the provisions applicable to the transportation of HM and HW, the life safety and fire-protection codes, or the storage of classified material and physical security.

5-3. Risk-Management Principles. A commander uses the three risk-management principles described in FM 100-14 to assist him in making environmental-risk decisions:

- Integrate risk management into mission planning, preparation, and execution.
- Make risk decisions at the appropriate level in the chain of command.
- Accept no unnecessary risk.

5-4. Environmental Benefits of Risk Management. Risk management assists a commander in complying with environmental regulatory and legal requirements and operating within the higher commander's intent. Risk management provides a commander a tool to do the following:

- Identify applicable environmental standards, laws, and rules of engagement (ROE) that affect a mission.
- Identify alternate courses of action (COAs) or alternate standards that meet the intent of the law and the operational requirements.
- Identify feasible and effective control measures where specific standards do not exist.
- Ensure better use of limited resources, such as training areas and ranges.
- Ensure the health and welfare of soldiers and other affected personnel.
- Minimize or eliminate damage to natural and cultural resources.

5-5. The Risk-Management Process. Risk management is the process of identifying, assessing, and controlling risk that arises from operational factors and balancing risk with mission benefits. This description integrates risk management into the military decision-making process (MDMP). FM 100-14 outlines the risk-management process and provides the framework for making risk management a routine part of planning, preparing, and executing operational missions and everyday tasks. Assessing environmental-related risks is part of the total risk-management process. The five steps in the risk-management process are as follows:

1. Identify the environmental hazards.
2. Assess the environmental hazards to determine the risk.
3. Develop the controls and make risk decisions.
4. Implement the controls.
5. Supervise and evaluate.

Knowledge of environmental factors is key to planning and decision-making. With this knowledge, a commander quantifies risks, detects problem areas, reduces risk of injury or death, reduces property damage, and ensures compliance with environmental laws and regulations. A unit commander should conduct risk assessments using a risk-management work sheet before conducting any training, operations, or logistical activities. Figure 5-2 shows a sample work sheet with all the blocks filled in. Blocks A through E contain general information. Steps 1 through 4 in the following paragraphs explain how to fill in columns F through J.

Step 1. Identify the Environmental Hazards. A commander and his staff identify environmental hazards during mission analysis (see Figure 5-2, column F). FM 100-14 defines a hazard as any actual or potential condition that can cause injury, illness, or death of personnel; damage to or loss of equipment or property; or mission degradation. Environmental hazards include all activities that may pollute, create negative noise-related effects, degrade archeological/cultural resources, or negatively affect threatened or endangered species habitat. Figure 5-3, page 5-6, lists common environmental hazards identified by environmental media areas.

Step 2. Assess the Environmental Hazards to Determine the Risk. Risk assessment is a three-stage process used to determine the risk of potential harm to the environment. A commander considers two factors, probability and severity. Probability is how often an environmental hazard is likely to occur. Severity is the effect that a hazard will have on the environment. Probability and severity are estimates that require an individual's judgment and a working knowledge of the risk-management process and its terminology. Figure 5-4, page 5-7, defines the five degrees of probability for a hazard; Figure 5-5, page 5-8, defines the four degrees of severity.

Stage 1. A commander assesses the probability of each hazard. For each hazard he identified (see Figure 5-2), he would make the following determinations:

A. Mission or Task: 586 th Engineer company (AFB)		B. Date/Time Group Begin: 010600RJun XX End: 061200Rjun XX		C. Date Prepared: 22 May XX	
D. Prepared By: (Rank, Last Name, Duty Position) 1 LT Elizabeth Young, XO					
E. Task:	F. Identify Hazards:	G. Assess Hazards:	H. Develop Controls:	I. Determine Residual Risk:	J. Implement Controls: ("How To")
Conduct convoy operations to Camp Yukon	Vehicle accidents and breakdowns causing fuel and HM spills	Moderate (M)	1. Train all drivers on proper actions to take during a spill: protect themselves, stop the flow, notify chain of command, and confine the spill. 2. Provide vehicle-spill equipment	Low (L)	TACSOP, para 8(a), OPORD train all drivers before the exercise. Supply NCO will order and issue vehicle-spill equipment. Platoon leaders will brief soldiers before the convoy (ARTEP 5-145-32-MTP 05-2-1030).
	Spills during refueling stops	Moderate (M)	1. Train all fuel handlers on proper refueling procedures. 2. Provide spill equipment. 3. Ensure that only fuel handlers dispense fuel. 4. Locate refueling sites away from bodies of water and wetland areas.	Low (L)	TACSOP, para 11(a), OPORD support platoon leader will check status of spill equipment and brief all soldiers, before the convoy, on refueling procedures (FM 10-71, FM 20-400, ARTEP 5-145-32-MTP 05-2-1024).
	Maneuver damage from off-road movement	Moderate (M)	1. Brief all drivers to stay on primary and secondary roads. 2. Identify all sensitive areas and habitats along the route. 3. Conduct prior-route recon.	Low (L)	TACSOP, para 9(a), OPORD provide all drivers with strip map marking route and sensitive areas; leaders account for all vehicles at halts (ARTEP 5-145-32-MTP 052-1030)
K. Determine the overall mission/task risk level after controls are implemented (circle one): LOW (L) MODERATE (M) HIGH (H) EXTREMELY HIGH (E)					

Figure 5-2. Sample risk-management work sheet with all blocks filled in

Element	Hazard
Air	Equipment exhaust Convoy dust Range fires Open-air burning Pyrotechnics/smoke pots/smoke grenades Part-washer emissions Paint emissions Air-conditioner/refrigeration CFCs HM/HW release
Archeological/cultural	Maneuvering in sensitive areas Digging in sensitive areas Disturbing or removing artifacts Demolition/munitions effects HM/HW spills Sonic booms/prop wash
Noise	Low-flying aircraft (helicopters) Demolition/munitions effects Nighttime operations Operations near post/camp boundaries and civilian populace Vehicle convoys/Maneuvers Large-scale exercises
Threatened/endangered species	Maneuvering in sensitive areas Demolition/munitions effects, especially during breeding seasons Disturbing individual species or their habitats HM/HW spills or releases Poor field sanitation Improper cutting of vegetation Damage to coral reefs
Soil (terrain)	Over use of maneuver areas Demolition/munitions effects Range fires Poor field sanitation Poor maneuver-damage control Erosion Troop construction effects Refueling operations HM/HW spills Maneuvering in ecologically sensitive areas such as wetlands and tundra
Water	Refueling operations near water sources HM/HW spills Erosion and unchecked drainage Amphibious/water-crossing operations Troop construction effects Poor field sanitation Washing vehicles at unapproved sites

Figure 5-3. Common environmental hazards

Frequent (A) Occurs very often, continuously experienced	
Single item	Occurs very often in service life; expected to occur several times over duration of a specific mission or operation; always occurs
Fleet or inventory of items	Occurs continuously during a specific mission or operation or over a service life
Individual soldier	Occurs very often in career; expected to occur several times during mission or operation; always occurs
All soldiers exposed	Occurs continuously during a specific mission or operation
Likely (B) Occurs several times	
Single item	Occurs several times in service life; expected to occur during a specific mission or operation
Fleet or inventory of items	Occurs at a high rate but experienced intermittently (regular intervals, generally often)
Individual soldier	Occurs several times in career; expected to occur during a specific mission or operation
All soldiers exposed	Occurs at a high rate but experienced intermittently
Occasional (C) Occurs sporadically	
Single item	Occurs sometime in service life; may occur about as often as not during a specific mission or operation
Fleet or inventory of items	Occurs several times in service life.
Individual soldier	Occurs sometime in career; may occur during a specific mission or operation but not often
All soldiers exposed	Occurs sporadically (irregularly, sparsely, or sometimes)
Seldom (D) Remotely possible; could occur at some time	
Single item	Occurs in service life but only remotely possible; not expected to occur during a specific mission or operation
Fleet or inventory of items	Occurs as isolated incidents; possible to occur sometime in service life but rarely; usually does not occur
Individual soldier	Occurs as isolated incident during a career; remotely possible but not expected to occur during a specific mission or operation
All soldiers exposed	Occurs rarely within exposed population as isolated incidents
Unlikely (E) Can assume will not occur, but not impossible	
Single item	Occurrence not impossible; but may assume will almost never occur in service life; may assume will not occur during a specific mission or operation
Fleet or inventory of items Individual soldier	Occurs very rarely (almost never or improbable); incidents may occur over service life
All soldiers exposed	Occurrence not impossible but may assume will not occur in career or during a specific mission or operation
	Occurs very rarely but not impossible

Figure 5-4. Hazard probability

Catastrophe (I)	Loss of ability to accomplish the mission or mission failure, death or permanent total disability (accident risk), loss of major or mission-critical system or equipment, major property (facility) damage, severe environmental damage, mission-critical security failure, unacceptable collateral damage
Critical (II)	Significantly (severely) degraded mission capability or unit readiness, permanent partial disability, temporary total disability exceeding 3 months time (accident risk), extensive (major) damage to equipment or systems, significant damage to property or the environment, security failure, significant collateral damage
Marginal (III)	Degrade mission capability or unit readiness; minor damage to equipment or systems, property, or the environment; lost day due to injury or illness, not exceeding 3 months (accident risk); minor damage to property or the environment
Negligible (IV)	Little or no adverse impact on mission capability, first aid or minor medical treatment (accident risk), slight equipment or system damage but fully functional and serviceable, little or no property or environmental damage

Figure 5-5. Hazard severities

- Based on experience and the information in Figure 5-4, page 5-7, he determines that a vehicle accident or breakdown causing a fuel and/or HM spill would seldom happen.
- Based on his judgment and the information in Figure 5-4, he determines that spills during refueling stops can occasionally be expected.
- Based on his working knowledge and the information in Figure 5-4, he determines that maneuver damage from off-road movement could happen frequently.

Stage 2. A commander assesses the severity of each hazard he identified. Definitions for the degrees of severity are not absolutes; they are more conditional and are mission, enemy, terrain, troops, time available, and civilian consideration (METT-TC) related. A commander must use his experience, judgment, lessons learned, and subject-matter experts to help determine the degrees of severity. Figure 5-5 defines the four degrees of severity.

The following are examples of hazard severities:

- Catastrophic—a spill of significant quantity in an unconfined area, such as a river or other water source, causing widespread pollution/health hazard to friendly forces and/or civilian personnel, as well as making cleanup extremely difficult, costly, and long-term. Will require notifying a higher HQ, public affairs, and outside agencies. Significant assistance from outside agencies is required. Widespread public concern is expected.
- Critical—a spill of more than 5 gallons or in an unconfined area such as drainage area, wetlands, rivers, or other water sources causing pollution and possible health hazards. Cleanup is difficult and costly and may require assistance and notification of outside agencies.
- Marginal—a small spill of less than 5 gallons in an area where the spill may not be as easily contained making spill cleanup efforts more difficult. No long-term, widespread environmental, or health effects are anticipated. Cleanup can be accomplished with available assets. Unit procedures may require reporting the spill to a higher HQ.
- Negligible—a small spill of less than 5 gallons in an area where the spill can be contained and immediately cleaned up using unit spill kits and available personnel.

From the information in Figure 5-2, page 5-5, a commander would make the following determinations:

- Based on experience and the information in Figure 5-5, he determines that a vehicle accident or breakdown causing a fuel and/or HM spill could be significant and cause major damage to the environment. The severity would be critical.
- Based on his judgment and the information in Figure 5-4, page 5-7, he determines that spills during refueling stops could cause minor damage to the environment. The severity would be marginal.
- Based on his working knowledge and the information in Figure 5-4, he determines that maneuver damage from off-road movement would cause little or no environmental damage. The severity would be negligible.

A commander uses the determinations from stage 1 with the severity caused by an occurrence in stage 2 to determine the overall risk of each hazard.

Stage 3. First a commander determines the risk level of each hazard. Then, using the defined degrees of probability and severity from above and the risk-assessment matrix (see Figure 5-6), he determines the overall environmental-related risk level.

Risk-Assessment Matrix					
Severity	Probability				
	Frequent (A)	Likely (B)	Occasional (C)	Seldom (D)	Unlikely (E)
Catastrophic (I)	E	E	H	H	M
Critical (II)	E	H	H	M	L
Marginal (III)	H	M	M	L	L
Negligible (III)	M	L	L	L	L

Risk Categories

Extremely High (E)
Mission failure if hazardous incidents occur during mission; a frequent or likely probability of catastrophic loss (IA or IB) or frequent probability of critical loss (IIA) occurs.

High (H)
Significantly degraded mission capabilities in terms of required mission standard or not accomplishing all parts of the mission, not completing the mission to standard (if hazards occur during mission); occasional to seldom probability of catastrophic loss (IC or ID); a likely to occasional probability of a critical loss occurring (IIB or IIC) with material and soldier system; frequent probability of marginal (IIIA) losses.

Moderate (M)
Expected degraded mission capabilities in terms of required mission standard; will have reduced mission capability (if hazards occur during mission); unlikely probability of catastrophic loss (IE). The probability of a critical loss occurring is seldom (IID). Marginal losses occur with a probability of no more often than likely (IIIB or IIIC). Negligible (IVA) losses are a frequent probability.

Low (L)
Expected losses have little or no impact on accomplishing the mission. The probability of critical loss is unlikely (IIE), while that of marginal loss is no more often than seldom (IIID through IIIE).

Figure 5-6. Risk-assessment matrix

For the hazards identified in Figure 5-3, page 5-6, a commander would make the following determinations and enter the assessments in column G of the risk-management work sheet (see Figure 5-2, page 5-5).

- Vehicle accidents and breakdowns causing fuel and/or HM spills would seldom happen, but if they did, the severity could

be critical. Based on this information and Figure 5-6 (severity row, critical, and probability column, seldom), he determines the overall assessment to be moderate.

- Spills during refueling stops will happen occasionally; when they do, the severity will be marginal. Based on this information and Figure 5-6 (severity row, marginal, and probability column, occasional), he determines the overall assessment to be moderate.
- Maneuver damage from vehicle off-road movement will happen frequently. The damage caused by this movement will be negligible. Based on this information and Figure 5-6 (severity row, negligible, and probability column, frequent), he determines the overall assessment to be moderate.

Step 3. Develop the Controls and Make a Decision. Controls eliminate or reduce the probability or severity of each hazard, thereby lowering the overall risk. Controls can consist of one of the categories listed in Figure 5-7, which also lists examples.

Control Type	Environmental-Related Examples
Educational	Conducting unit environmental-awareness training Conducting an environmental briefing before deployment Performing tasks to environmental standards Reviewing environmental considerations in AARs Reading unit's environmental SOPs and policies Conducting spill-prevention training Publishing an environmental annex/appendix to the OPORD/OPLAN
Physical	Providing spill-prevention equipment Establishing a field trash-collection point and procedures Establishing a field satellite-accumulation site and procedures Policing field locations Practicing good field sanitation Filling in fighting positions Posting signs and warnings for off-limit areas
Avoidance	Maneuvering around historical/cultural sites Establishing refueling and maintenance areas away from wetlands and drainage areas Crossing streams at approved sites Preventing pollution Limiting noise in endangered and threatened species habitats Avoiding refueling over water sources Curtailing live vegetation use for camouflage

Figure 5-7. Environmental-related controls

Many environmental-risk controls are simply extensions of good management, housekeeping, operations security (OPSEC), and leadership practices. Risk-reduction controls can include conducting rehearsals, changing locations, establishing procedures, and increasing supervision. Using the information from Figure 5-7, page 5-11, a commander fills in column H of the risk-management work sheet (see Figure 5-2, page 5-4).

Once all practicable risk-control measures are in place, some risk will always remain. Based on the controls that he develops, a commander reassesses the hazards using the procedures from step 2. Once he determines the residual risk for each hazard, he fills in column I in the risk-management work sheet (see Figure 5-2). The residual risk requires his attention. He decides whether or not to accept the risk. The commander may direct his staff to consider additional controls or a change in the COA. In the example below, where the risk is low, the commander accepts the risk and proceeds to implement the controls.

Step 4. Implement the Controls. Implementing the controls requires informing all subordinates of the risk-control measures. To do this, a commander defines the controls by filling in column J of the risk-management work sheet (see Figure 5-2). He states how each control will be implemented and assigns responsibility for implementing the controls. For example, if the control measures for a fuel-spill hazard are to ensure that operators are properly trained to dispense fuel and ensure that appropriate spill equipment is available, then he must ensure that these controls are in place before an operation.

A commander must anticipate environmental requirements and incorporate them as part of his long-, short-, and near-term planning. The key to success is identifying the who, what, where, when, and how aspects of each control and entering the information in the work sheet.

Step 5. Supervise and Evaluate. A commander and his staff continuously monitor controls throughout an operation to ensure their effectiveness and to modify them as required. The commander—

- Makes on-the-spot corrections and evaluates individual and collective performances.
- Holds those in charge accountable.
- Requires that all tasks be performed to applicable environmental standards.

- Ensures that the AAR process includes an evaluation of environmental-related hazards, controls, soldiers' performance, and leaders' supervision.
- Ensures that environmental lessons learned are developed for use in future operations.

5-6. Summary. A commander uses risk assessment to estimate the impact of his unit's activities on the natural environment. Environmental-related risk is part of the risk-management process, as detailed in FM 100-14. Knowledge of environmental factors is key to planning and decision-making. Risk management does not convey authority to deliberately disobey local, state, national, or HN laws and regulations. A commander uses the risk-management guidelines to help him comply with environmental regulatory and legal requirements and operate within the higher commander's intent. He should complete the risk assessments before conducting any training, operations, or logistical activities. Risk assessments help a commander and his staff identify potential environmental hazards, develop controls, make risk decisions, implement those controls, and ensure proper supervision and evaluation. Unit staffs consolidate environmental risks, as well as all other risks, into the overall unit risk-management plan for an operation.

APPENDIX F
RISK-MANAGEMENT ASSESSMENT PROCESS

	Page
Purpose	F-1
Practical Application	F-1
Summary	F-6

F-1. Purpose. The risk-management work sheet is a tool that leaders may use to track and document risk. The work sheet (Figure 5-2, page 5-5) provides a logical starting point to track the process. Figure F-1, page F-2, provides instructions for the work sheet. Planners use the work sheet to document risk-management steps taken during planning, preparation, and execution of training and combat missions and tasks. It is important to remember that this form can be used to track all risk, not just environmental-related risk.

F-2. Practical Application. This section provides a practical application of assessing environmental-related risk. This exercise uses the five-step process of risk management described in Chapter 5. This exercise also employs the risk-management work sheet to document and track risk. Although the following scenario depicts a field-training exercise (FTX), units use these procedures to assess environmental-related risk during all operations. This scenario concentrates specifically on environmental-related risk; however, these risks would be incorporated into the company's overall risk-management plan.

Work-Sheet Instructions	
Block/ Column	
A-E	Self-explanatory
F	Identify Hazards-identify hazards by reviewing METT-TC factors for the mission or task. Additional factors include historical lessons learned, experience, judgment, equipment characteristics and warnings, and environmental considerations.
G	Assess Hazards-assessment includes historical lessons learned, intuitive analyses, experience, judgement, equipment characteristics and warnings, and environmental considerations. Determine initial risk for each hazard by applying the risk-assessment matrix (Figure 5-6, page 5-10). Enter the risk level for each hazard.
H	Develop controls-develop one or more controls for each hazard that will either eliminate the hazard or reduce the risk (probability and/or severity) of a hazardous incident. Specify who, what, where, when, and how for each control. Enter controls.
I	Determine Residual Risk-determine the residual risk for each hazard by applying the risk-assessment matrix. Enter the residual-risk level for each hazard.
J	Implement Controls-decide how each control will be put into effect or communicated to the personnel who will make it happen (written or verbal instruction: tactical, safety, garrison SOPs, rehearsals). Enter controls.
K	Determine Overall Mission/Task Risk-select the highest residual-risk level and circle it. This becomes the overall mission or task-risk level. The commander decides whether the controls are sufficient to accept the residual risk. If the risk is too great to continue the mission or task, the commander directs development of additional controls or modifies, changes, or rejects the COA.
	Supervise and Evaluate-this last step is not on the work sheet. Plan how each control will be monitored for implementation (continuous supervision, spot-checks), and reassess hazards as the situation changes. Determine if the controls worked and if they can be improved. Pass on lessons learned.

Figure F-1. Instructions for risk-management work sheet

Practical Exercise

The 586th Assault Float Bridge (AFB) Company will conduct a five-day FTX in Anatuva training area of Camp Yukon. The unit will depart Fort Chilly and convoy 120 miles on limited-access highways. The commander has designated rest areas and tactical refueling points along the route. The trip is expected to take 8 hours. Upon arrival at Camp Yukon, the unit will move into the Anatuva training area and set up a bivouac site, preceded by their quartering party. During the FTX, the company will conduct tactical-bridging operations on the Yukon River. The FTX will involve normal operations (12 to 16 hours a day), with some night and limited visibility operations. The operations will include the use of pyrotechnics and blank ammunition, but no live fire will be conducted. The area has hills, wetlands, several winding streams, and one large river. The wetlands are identified and marked. The forecasted weather will not adversely affect operations. The soldiers are somewhat familiar with the terrain, which contains some identified and marked-off archeological sites. The training area contains the habitat for two endangered species, which are marked and posted. The unit will conduct unit-maintenance, refueling, messing, shower, and field-sanitation operations within the bivouac site.

Step 1. Identify the Hazards. To ensure risk management throughout the operational plan, the unit's executive officer (Lieutenant Young) conducted an operational analysis to break down the exercise into events. This allowed her to manage the risks for the various tasks. She also identified particular tasks for the operation using the company Mission Training Plan (MTP). Figure F-2, page F-4, illustrates the unit's prepared operational analysis.

Leaders developed the hazard list using their experience, lessons learned, unit SOPs, applicable references, and guidance from the chain of command. The unit consulted Fort Chilly's and Camp Yukon's installation and operational staffs to obtain more information on the environmental considerations for the area of operations. They identified applicable environmental standards, laws, and ROE that affected the mission.

Conduct preoperational checks.
Conduct convoy operations to Camp Yukon.
Establish a bivouac:

- Conduct quartering party operations.
- Establish a defensive perimeter.
- Conduct refueling operations.
- Conduct mess operations.
- Establish field latrines.
- Establish field maintenance operations.

Plan and direct assault float bridge construction.
Prepare for redeployment.
Conduct convoy operations to Ft. Chilly.
Conduct recovery operations.
Conduct an AAR.

Figure F-2. Operational analysis

Company leaders annotated each task and associated environmental hazards on the risk-management work sheet in Figure F-3, columns E and F. For the purposes of this practical example, only the high-profile tasks (2, 3, and 4) are detailed in the work sheet.

Step 2. Assess the Hazards. Unit leaders assessed each hazard to determine the risk for potential harm to the environment. Their assessment was based upon how often the environmental hazard occurred during the operation (probability) and what effect the hazard had on the environment (severity). They used the probability and severity definitions from Chapter 5, Figures 5-4 and 5-5, pages 5-7 and 5-8. Leaders determined the initial risk of each hazard by applying the risk-assessment matrix in Figure 5-6, page 5-10. The unit commander informed his staff to be sensitive to tactical bridging operations and their effects on the Yukon River and surrounding areas. Each hazard assessment was annotated in column G, Figure F-3.

Step 3. Develop Controls and Make a Decision. Unit leaders developed controls to eliminate or reduce the probability or severity of each hazard. They identified a mix of educational-, physical-, and avoidance-type controls and annotated them in column H, Figure F-3. Once all risk-control measures were in place, some risk remained. This residual risk was annotated in column I, Figure F-3. Unit leaders informed the chain of command and appropriate commander of the residual risk and its implications for the operation. The commander was concerned over the

environmental hazards associated with the bridging operations and directed his staff to consider additional controls. The staff developed additional controls and presented the revised risk assessment to the commander, thereby further reducing the residual risk. The commander agreed that the new controls were sufficient and decided the residual risk was acceptable.

A. Mission or Task: 586 th Engineer company (AFB)		B. Date/Time Group Begin: 010600RJun XX End: 061200Rjun XX		C. Date Prepared: 22 May XX	
D. Prepared By: (Rank, Last Name, Duty Position) 1 LT Elizabeth Young, XO					
E. Task:	F. Identify Hazards:	G. Assess Hazards:	H. Develop Controls:	I. Determine Residual Risk:	J. Implement Controls: ("How To")
Conduct convoy operations to Camp Yukon	Vehicle accidents and breakdowns causing fuel and HM spills	Moderate (M)	1. Train all drivers on proper actions to take during a spill: protect themselves, stop the flow, notify chain of command, and confine the spill. 2. Provide vehicle-spill equipment	Low (L)	TACSOP, para 8(a), OPORD- train all drivers before the exercise. Supply NCO will order and issue vehicle-spill equipment. Platoon leaders will brief soldiers before the convoy (ARTEP 5-145-32-MTP 05-2-1030).
	Spills during refueling stops	Moderate (M)	1. Train all fuel handlers on proper refueling procedures. Provide spill equipment. 3. Ensure that only fuel handlers dispense fuel. 4. Locate refueling sites away from bodies of water and wetland areas.	Low (L)	TACSOP, para 11(a), OPORD- support platoon leader will check status of spill equipment and brief all soldiers, before the convoy, on refueling procedures (FM 10-71, ARTEP 5-145-32-MTP 05-2-1024).
	Maneuver damage from off-road movement	Moderate (M)	1. Brief all drivers to stay on primary and secondary roads. 2. Identify all sensitive areas and habitats along the route. 3. Conduct prior-route recon.	Low (L)	TACSOP, para 9(a), OPORD- provide all drivers with strip map marking route and sensitive areas; leaders account for all vehicles at halts (ARTEP 5-145-32-MTP 052-1030)
K. Determine the overall mission/task risk level after controls are implemented (circle one): LOW (L) MODERATE (M) HIGH (H) EXTREMELY HIGH (E)					

Figure F-3. Sample of completed work sheet for initial convoy

Step 4. Implement Controls. Leaders identified how each control would be implemented and assigned responsibility to unit personnel. The “how to” for each control was annotated in column J, Figure F-3, page F-5. For example, fueling bridge boats during bridging operations was a major concern for the company. Leaders identified several control measures to include ensuring that operators were properly trained to dispense fuel, appropriate spill equipment was available, and all fueling of boats be completed while the boats were still on the trucks before launch. This step required leaders to anticipate environmental requirements and incorporate them as part long-term, short-term, and near-term planning. The residual risk determination was annotated in column K, Figure F-3.

Step 5. Supervise and Evaluate. Leaders and staff continuously monitored controls throughout the operation to ensure their effectiveness and modified controls as required. Leaders made on-the-spot corrections and evaluated individual and collective performances. They held those in charge accountable and ensured that all tasks were performed to applicable standards. Leaders discussed the evaluation of environmental-related hazards, controls, soldier performance, and leader supervision during AARs to ensure the development of environmental lessons learned, for use in future operations.

F-3. Summary. The 586th AFB Company leadership properly managed environmental-related risk during their operation by accurately identifying potential environmental hazards, developing controls, making risk decisions, implementing controls, and ensuring proper supervision and evaluation. Due to their effective risk management, the company successfully completed their mission and minimized their company’s impact on the environment.

Additional sample risk-management work sheets are shown in Figures F-4 and F-5, pages F-7 through F-12.

A. Mission or Task: 586 th Engineer company (AFB)		B. Date/Time Group Begin: 010600RJun XX End: 061200RJun XX		C. Date Prepared: 22 May XX	
D. Prepared By: (Rank, Last Name, Duty Position) 1 LT Elizabeth Young, XO					
E. Task:	F. Identify Hazards:	G. Assess Hazards:	H. Develop Controls:	I. Determine Residual Risk:	J. Implement Controls: ("How To")
Establish a tactical bivouac	Maneuver damage from off-road movement	Moderate (M)	1. Use quartering party to direct vehicles and equipment into the bivouac site. 2. Identify and mark all sensitive areas within the bivouac area. 3. Avoid using areas with endangered and threatened species. 4. Provide maneuver-damage control team.	Low (L)	TACSOP, para 11(a), OPORD- XO will lead quartering party, Camp Yukon range control map. (ARTEP 5-145-32, MTP 05-2-0908, FM 71-1, FM 20-400)
	Spills from tactical refueling operations	Moderate (M)	1. Brief all fuel handlers on proper refueling procedures. 2. Prove spill equipment. 3. Ensure that only fuel handlers will dispense fuel. 4. Locate refueling sites away from bodies of water and wetland areas.	Low (L)	TACSOP, para 11(a), OPORD- support platoon leader will check status of spill equipment and brief all soldiers, before the convoy, on refueling procedures (FM 10-71, FM 20-400, ARTEP 5-145-32-MTP 05-2-1024).
	HM spills from vehicle-maintenance operations	Moderate (M)	1. Brief all personnel on proper waste accumulation site and field PMCS procedures.	Low (L)	TACSOP, para 12(a), OPORD- TM 38-410, Camp Yukon Environmental and Range Regulations (FM 43-5,
K. Determine the overall mission/task risk level after controls are implemented (circle one): <div style="display: flex; justify-content: space-around; text-align: center;"> LOW (L) MODERATE (M) HIGH (H) EXTREMELY HIGH (E) </div>					

Figure F-4. Sample of completed work sheet for tactical bivouac

A. Mission or Task: 586 th Engineer company (AFB)		B. Date/Time Group Begin: 010600RJun XX End: 061200RJun XX		C. Date Prepared: 22 May XX	
D. Prepared By: (Rank, Last Name, Duty Position) 1 LT Elizabeth Young, XO					
E. Task:	F. Identify Hazards:	G. Assess Hazards:	H. Develop Controls:	I. Determine Residual Risk:	J. Implement Controls: ("How To")
Establish a tactical bivouac (continued)	HM spills from vehicle-maintenance operations (continued)	Moderate (M)	2. Provide spill equipment. 3. Provide secondary containment for all drums and containers.		ARTEP 5-145-32-MTP 5-2-1131, ARTEP 5-145-32, MTP 5-2-1005).
	Digging in sensitive and restricted areas	Moderate (M)	1. Dig only in approved area confirmed by range control. 2. Identify and mark all sensitive areas and habitats within the AO. 3. Site all fighting positions to avoid sensitive areas. 4. Fill in all excavations upon departure.	Low (L)	TACSOP, para 7(a), OPOD- FM 7-10, Camp Yukon Environmental and Range Regulations (ARTEP 5-145-32-MTP 05-2-0913).
	Starting range and training area fires	Moderate (M)	1. Inform soldiers that no open fires are allowed. 2. Provide fire-prevention equipment at refueling, messing, maintenance, and other specified locations in OPOD. 3. Brief soldiers on the proper use of pyrotechnics, smoke pots, and grenades.	Low (L)	TACSOP, para 7(a), OPOD, Camp Yukon Environmental and Range Regulations (FM 3-50, ARTEP 5-145-32-MTP 05-2-0917).
K. Determine the overall mission/task risk level after controls are implemented (circle one): LOW (L) MODERATE (M) HIGH (H) EXTREMELY HIGH (E)					

Figure F-4. Sample of completed work sheet for tactical bivouac (continued)

A. Mission or Task: 586 th Engineer company (AFB)		B. Date/Time Group Begin: 010600RJun XX End: 061200RJun XX		C. Date Prepared: 22 May XX	
D. Prepared By: (Rank, Last Name, Duty Position) 1 LT Elizabeth Young, XO					
E. Task:	F. Identify Hazards:	G. Assess Hazards:	H. Develop Controls:	I. Determine Residual Risk:	J. Implement Controls: ("How To")
Establish a tactical bivouac (continued)	Polluting water sources from field latrines and mess operations	Moderate (M)	1. Coordinate for "port-a-potty" units from range control. 2. Recover all mess-operations waste (grease, trash). 3. Inform soldiers of proper field-sanitation techniques. 4. Train field-sanitation teams. 5. Establish trash-collection points.	Low (L)	TACSOP, para 7(a), OPORD- FM 7-10, Camp Yukon Environmental and Range Regulations (FM 21-10, FM 10-23, ARTEP 5-145-32-MTP 05-2-1031, ARTEP 5-145-32-MTP 05-2-1009).
	Leaving litter and debris in training area	Moderate (M)	1. Implement unit leader conducts daily inspections of bivouac area. 2. Brief soldiers on trash-collection points and procedures. 3. Conduct periodic police calls of area. 4. Ensure that leader accounts for all equipment, supplies, wire, trash, and waste before departing an area.	Low (L)	TACSOP, para 7(a), OPORD- FM 7-10, Camp Yukon Environmental and Range Regulations-First Sergeant will coordinate training-area final inspection with range control.
Plan and direct assault float-bridge construction	Maneuver damage and erosion to entry and exit banks	High (H)	1. Conduct operations only in approved areas. 2. Use recon party to identify and mark	Moderate (M)	TACSOP, para 13(a), OPORD- FM 90-13, Camp Yukon Environmental and Range Regulations
K. Determine the overall mission/task risk level after controls are implemented (circle one): LOW (L) MODERATE (M) HIGH (H) EXTREMELY HIGH (E)					

Figure F-4. Sample of completed work sheet for tactical bivouac (continued)

A. Mission or Task: 586 th Engineer company (AFB)		B. Date/Time Group Begin: 010600RJun XX End: 061200RJun XX		C. Date Prepared: 22 May XX	
D. Prepared By: (Rank, Last Name, Duty Position) 1 LT Elizabeth Young, XO					
E. Task:	F. Identify Hazards:	G. Assess Hazards:	H. Develop Controls:	I. Determine Residual Risk:	J. Implement Controls: ("How To")
Plan and direct assault float-bridge construction (continued)	Maneuver damage and erosion to entry and exit banks (continued)	High (H)	all sensitive areas and routes within the AO. 3. Use vehicle guides to direct vehicles and equipment into the AO. 4. Control vehicle speeds and movements. 5. Harden and stabilize entry and exit points to minimize erosion and maximize mobility.	Moderate (M)	(TM 5-5420-209-12, TM 5-1940-277-10, ARTEP 5-145-32-MTP 05-2-0605).
	Spill into river from over-the-water boat refueling and fueling of tactical vehicles near river		1. Train all fuel handlers on proper refueling procedures. 2. Provide spill equipment. 3. Ensure that only fuel handlers will dispense fuel. 4. Locate refueling site away from bodies of water and wetland areas. 5. Ensure that there will be no over-the-water refueling.		TACSOP, para 13(a), OPOD- FM 90-13, Camp Yukon Environmental and Range Regulations (TM 5-5420-209-12, TM 5-1940-277-10, ARTEP 5-145-32-MTP 05-2-0605).
	Oil and greasy water bilged from bridge-erection boats into river	High (H)	1. Brief all boat operators concerning proper bilging procedures. 2. Provide spill equipment for each boat.	Moderate (M)	TACSOP, para 13(a), OPOD- FM 90-13, Camp Yukon Environmental and Range Regulations (TM 5-5420-209-12).
K. Determine the overall mission/task risk level after controls are implemented (circle one): LOW (L) MODERATE (M) HIGH (H) EXTREMELY HIGH (E)					

Figure F-5. Sample of completed work sheet for float-bridge construction

A. Mission or Task: 586 th Engineer company (AFB)		B. Date/Time Group Begin: 010600RJun XX End: 061200RJun XX		C. Date Prepared: 22 May XX	
D. Prepared By: (Rank, Last Name, Duty Position) 1 LT Elizabeth Young, XO					
E. Task:	F. Identify Hazards:	G. Assess Hazards:	H. Develop Controls:	I. Determine Residual Risk:	J. Implement Controls: ("How To")
Plan and direct assault float-bridge construction (continued)	Oil and greasy water bilged from bridge-erection boats into river (continued)	High (H)	3. Steam clean each engine compartment before FTX. 1. Conduct operations only in approved areas. 2. Use recon party to identify and mark all sensitive areas and routes within AO. 3. Use vehicle guides to direct vehicles and equipment into the AO. 4. Control vehicle speeds and movements.	Moderate (M)	TACSOP, para 10(a), OPORD- Camp Yukon Range control Map, Camp Yukon Environmental and Range Regulations (ARTEP 5-145-32-MTP 05-2-0410, FM 5-170).
	Use of smoke pots and grenades in sensitive habitat areas and civilian population areas	High (H)	1. Brief all leaders on proper use and deployment of smoke pots and grenades. 2. Use smoke only in approved areas. 3. Coordinate with range control before smoke operations.	Moderate (M)	TACSOP, para 13(a), OPORD- FM 90-13, Camp Yukon Environmental and Range Regulations (FM 3-50, ARTEP 5-145-32-MTP 05-2-0917).
K. Determine the overall mission/task risk level after controls are implemented (circle one): LOW (L) MODERATE (M) HIGH (H) EXTREMELY HIGH (E)					

Figure F-5. Sample of completed work sheet for float-bridge construction (continued)

A. Mission or Task: 586 th Engineer company (AFB)		B. Date/Time Group Begin: 010600RJun XX End: 061200RJun XX		C. Date Prepared: 22 May XX	
D. Prepared By: (Rank, Last Name, Duty Position) 1 LT Elizabeth Young, XO					
E. Task:	F. Identify Hazards:	G. Assess Hazards:	H. Develop Controls:	I. Determine Residual Risk:	J. Implement Controls: ("How To")
Plan and direct assault float-bridge construction (continued)	Use of smoke pots and grenades in sensitive habitat areas and civilian population areas (continued) Maneuvering in threatened and endangered species habitat and archeological sites	High (H)	4. Observe and calculate atmospheric effects on the dispersion and direction of the smoke. 5. Stop smoke operations immediately if atmospheric conditions deteriorate or when notified by range control. 1. Inform all leaders to conduct vehicle and equipment cleaning only at approved washracks before departure from Camp Yukon. 2. Ensure that leaders will inform and supervise soldiers.	Low (L)	TACSOP, para 14(a), OPORD- Camp Yukon Environmental and Range Regulations
K. Determine the overall mission/task risk level after controls are implemented (circle one): LOW (L) MODERATE (M) HIGH (H) EXTREMELY HIGH (E)					

Figure F-5. Sample of completed work sheet for float-bridge construction (continued)

GLOSSARY

1SG first sergeant

2nd second

AAR after action review; after action report

ACCP Army Correspondence Course Program

AFB assault float bridge

AL Alabama

AR Army regulation

ARPA Archeological Resources Preservation Act

ARTEP Army Training and Evaluation Program

asbestos A group of natural minerals that tend to separate into strong, heat-resistant fibers. It is a suspected carcinogen.

ATTN attention

CAA Clean Air Act

carcinogen A substance known to cause or help the growth of cancerous cells.

CEQ council on environmental quality

CERCLA Comprehensive Environmental Response, Compensation and Liability Act; regulates clean up of hazardous waste sites. Also known as "Superfund."

CFC chlorofluorocarbons; a family of fully halogenated hydrocarbons containing fluorine and chlorine. These substances are environmentally harmful because they deplete the earth's stratospheric ozone layer.

CFR code of federal regulations

characteristics of hazardous waste A method of identifying which substances are HW by their physical/chemical properties. EPA has define four characteristics that can be determined by tests:

1. Ignitability: the ability to catch fire.
2. Corrosivity: the ability to corrode other materials.
3. Reactivity: the ability to enter into a violent chemical reaction, which may involve explosions or fumes.
4. Toxicity: the ability to release certain toxic constituents when leached with mild acid.

chemical A substance that is produced by or used in a chemical process

civil action A law suit filed in court against a person who has either failed to comply with statutory or regulatory requirements or an administrative order or has contributed to a release of hazardous wastes or constituents. These are four types of civil actions: compliance, corrective, monitoring and analysis, and imminent hazard.

COA course of action

Commander's Guide to Environmental Management This reference provides commanders with basic information concerning their responsibilities in management the Army's environmental program at installation or activity level. It is intended as a primer on the environmental program. The guide is currently published by USAEC; it will be converted to an official Army publication.

conexes container express

CONUS continental United States; from an environmental standpoint, CONUS refers to any land over which the EPA has jurisdiction. Included are Alaska, Hawaii, Puerto Rico, Guam and the Virgin Islands.

criminal action A prosecutorial action taken by the United States Government or a state towards any person(s) who has knowingly and willfully not complied with the law. Such an action can result in the imposition of fines or imprisonment.

CRMP Cultural Resources Management Plan

CS riot-control chemical agent

CWA Clean Water Act

DA Department of the Army

DD Department of Defense

discharge Includes, but is not limited to, the accidental or intentional spilling, leaking, pumping, emitting, emptying, or dumping of a substance into or on any land or water.

disposal The discharge, deposit, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water.

DOD Department of Defense

DOL Directorate of Logistics

DOT Department of Transportation

DPTM Directorate of Plans, Training, and Mobilization

DPW Directorate of Public Works

DRMO Defense Reutilization and Marketing Office

DS2 decontaminant solution 2; incompatible with most metals, DS2 is procured exclusively by DOD to decontaminate machinery after a chemical-weapons attack. DS2 is not authorized for training due to the hazards it presents to humans who are exposed to it. It can cause severe burns, stricture of the esophagus, and damage to the central nervous

system, liver, and reproductive system.

EA environmental assessment; a study to determine if significant environmental impacts are expected from a proposed action, required by NEPA.

EC environmental coordinator

ECAS Environmental Compliance Assessment System; this system involves the use of the Environmental Compliance Assessment. Also, referred to as an environmental audit or environmental program review; it involves an examination of an installation's environmental program to identify possible compliance deficiencies. It also includes designing corrective-action plans and implementing fixes for identified deficiencies.

ecology The science concerned with the relationship between organisms and their environment and the interrelationships and interdependence of these organisms; that is, the study of living things in relation to the environment and to each other.

EMO environmental management office

endangered species Those species, designated by the Secretary of the Interior, that are in danger of extinction throughout all or a significant portion of their range.

EIS environmental impact statement; a document prepared by EPA or under EPA guidance that identifies and analyzes in detail the environmental impacts of a proposed action.

ENRD environmental and natural resources division

environmental audit A compliance review of facility operations, practices, and records to assess and verify compliance with federal, state, and local environmental laws and regulations.

environmental noise The outdoor noise environment consisting of all noise (including ambient noise) from all sources that extend beyond, but do not include, the workplace.

environmental pollution The condition resulting from the presence of chemical, mineral, radioactive, or biological substances that alter the natural environment or that adversely affect human health or the quality of life, biosystems, the environment, structures and equipment, recreational opportunities, aesthetics, or natural beauty.

environmental stewardship The care and management of another's property. Army objective is to plan, initiate, and carry out its actions and programs in a manner that minimizes adverse effects on the environment without impairing the mission.

EPA Environmental Protection Agency; established in 1970, the EPA is charged with protecting and enhancing the environment today and for future generations to the fullest extent possible.

EPCRA Emergency Planning and Community Right-to-Know Act

EQCC Environmental Quality Control Committee

ESA Endangered Species Act

FFCA Federal Facilities Compliance Act

FGS final governing standards

FIFRA Federal Insecticide, Fungicide, and Rodenticide Act

FM field manual

FMO facilities management officer

FOIA Freedom of Information Act

FTX field training exercise

FY fiscal year

groundwater A body of water, generally within the boundaries of a watershed, that exists in the internal passageways of porous geological

formations (aquifers) and which flows in response to gravitational forces. Nearly half of the US population uses groundwater as its primary water source.

hazard A condition that can be expected to cause damages including injury or death to exposed individuals.

hazardous substance Under CERCLA, any element, compound, mixture, solution, or substance which, when released into the environment, may present substantial danger to public health/welfare or the environment. The definition is broader than the definition of hazardous waste under RCRA.

HAZCOM hazardous communications; the responsibility of leaders and supervisors concerning possible hazards in the workplace and notification of hazards and necessary precautions to their soldiers.

HAZMIN hazardous-waste minimization

health hazards Those that can cause injury or illness when a person is exposed to hazardous chemicals by breathing, swallowing, skin contact, or eye contact.

HM hazardous material; any material, including waste, that may pose an unreasonable risk to health, safety, property, or the environment, when they exist in specific quantities and forms. Chemicals that have been determined by the Secretary of Transportation to present risks to safety, health, and property during transportation.

HN host nation; a nation which receives the forces and/or supplies of Allied nations and/or North Atlantic Treaty Organization (NATO) organizations to be located on, or to operate in or to transit through its territory.

HQ headquarters

HW hazardous waste; waste which, if improperly managed, can create a risk to the safety or health of people or to the environment. EPA considers hazardous waste a subset of both solid waste and hazardous materials. Technically, those wastes that are regulated under RCRA 40 CFR, part

261 either because they are "listed" or because they are ignitable, corrosive, reactive, or toxic.

ICUZ installation compatibility use zone; a land use planning procedure employed to control environmental noise.

ID identification

IOSC installation on-scene coordinator

IPM integrated pest management; the management of actual and potential pest problems using a combination of available preventive and corrective control measures. The biological effectiveness, environmental acceptability, and cost effectiveness of the measures must be considered before such measures can be approved for use on Army-controlled property.

IRP installation restoration program; the military's program to address environmental contamination at its facilities. An installation response team are those collective persons designated to act in an emergency to perform functions directed by the installation on-scene coordinator.

IRT installation response team

ISCP Installation Spill Contingency Plan; document detailing resources and procedures for cleanup of oil and hazardous-substances spills.

ISD installation supply division

landfill An in-ground disposal site for wastes that were designed to reduce air pollution and unsightly trash that resulted from open dumping and burning. Older landfills leak contaminants into the soil and groundwater, although many new ones are built with elaborate leak-prevention systems.

LEPC local emergency planning committee

LT lieutenant

MACOM major Army command

MCL maximum contaminant level

MDMP military decision-making process

mech mechanized

METT-T mission, enemy, terrain, troops, and time available

METT-TC mission, enemy, terrain, troops, time available, and civilian consideration

MMPA Marine Mammal Protection Act

MO Missouri

monitoring The assessment of emissions and ambient air quality conditions. Monitoring techniques used are emission estimates, visible emission readings, diffusion or dispersion estimates, and sampling or measurement with analytical instruments.

MSDS material safety data sheet

MTP mission training plan

NAAQS national ambient air quality standards

NBC nuclear, biological, and chemical

NCO noncommissioned officer

NCP National Contingency Plan

NEPA National Environmental Policy Act

NHPA National Historic Preservation Act

NOV notice of violation; formal written document provided to an installation

by a regulatory agency as a result of environmental noncompliance.

NPDES National Pollutant Discharge Elimination System

NSN national stock number

OCONUS outside the continental United States

OK Oklahoma

OPFOR opposing forces

OPORD operation order

OPSEC operations security

OSHA Occupational Safety and Health Act

PAO public affairs office(r)

PCB polychlorinated biphenyls; a family of chemicals that are probable carcinogens, once widely used in electrical insulation. Banned in the US in 1979, PCB contamination has occurred on US bases where abandoned electrical transformers have leaked into the environment.

physical hazards Those that can cause explosions, fires, violent chemical reactions, or other hazardous situations.

PLL prescribed load list

PMO provost marshal office

PMP Pest Management Plan

POC point of contact

POL petroleum, oils, and lubricants

PPE personal protective equipment

primacy A legal situation which allows the states to have environmental and worker protection standards more stringent than the federal standards.

RCRA Resource Conservation and Recovery Act

reclamation Regeneration of a material, or processing a material to recover a usable product. Examples include the recovery of lead from spent batteries or the regeneration of spent solvents.

recovered materials Waste materials and by-products that have been recovered or diverted from solid waste, but such term does not include those materials and by-products generated from, and commonly reused within, an original manufacturing process.

recyclability The ability of a product or material to be recovered from, or otherwise diverted from, the solid waste stream for the purpose of recycling.

recycling The process by which recovered materials are transformed into new or usable products.

risk The probability of exposure, coupled with the severity of the consequences. Risk is often used in a more general way than danger, in that risk is used to describe potential financial loss or property damage in addition to environmental damage or personal injury.

ROE rules of engagement

S1 Adjutant (US Army)

S3 Operations and Training Officer (US Army)

S4 Supply Officer (US Army)

SARA Superfund Amendments and Reauthorization Act

SDWA Safe Drinking Water Act

SF standard form

SJA staff judge advocate

SOFA Status of Forces Agreement; an agreement on the stationing of forces to which the US is a party, such as a multilateral or bilateral stationing or base rights agreement, or an arrangement or understanding concluded thereunder.

solvents Volatile organic compounds (trichloroethylene and so forth) used as powerful cleaners, degreasers, and paint strippers. Solvents were widely used in the military's industrial production and maintenance operations and routinely dumped untreated into the ground.

SOP standing operating procedure

source reduction The DOD has set the goal of reducing hazardous waste generation at its sources. This reduction is to be achieved through product substitution, recycling, and inventory control, and by developing new industrial processes that use less hazardous materials, such as bead-blasting rather than solvents to remove paint.

sovereign immunity A legal situation where the sovereign (for example, federal government) cannot be held legally liable for what it does or does not do.

spill A generic term that encompasses the accidental and the deliberate but unpermitted discharge or release of a pollutant.

Superfund *See CERCLA.*

surface water Water contained in rivers, streams, and so forth.

STB super tropical bleach

TACSOP tactical standing operating procedure

TC training circular

TEL telephone

TG trainer's guide

threatened species Those species that are likely to become endangered within the foreseeable future throughout all or a significant portion of their range.

TID turn-in document

TM technical manual

toxic Capable of producing injury, illness, or damage to humans, domestic livestock, wildlife, or other organisms through ingestion, inhalation, or absorption through any body surface.

TRADOC United States Army Training and Doctrine Command

TSCA Toxic Substances Control Act

TSDF treatment, storage, disposal facility

US United States

USAEHA United States Army Environmental Hygiene Agency

USAEC United States Army Environmental Center; provides oversight, coordination, and execution support for Army environmental programs and projects, and technical and related support. Formerly the US Army Toxic and Hazardous Materials Agency (USATHAMA).

USAES United States Army Engineer School

USE used-solvent elimination program

USEPA United States Environmental Protection Agency

USFWS United States Fish and Wildlife Service

VA Virginia

wetlands Generally includes marshes, swaps, bogs, and similar areas. Areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for saturated soil conditions.

XO executive officer

A. Mission or Task:		B. Date/Time Group Begin: End:		C. Date Prepared:	
D. Prepared By: (Rank, Last Name, Duty Position)					
E. Task:	F. Identify Hazards:	G. Assess Hazards:	H. Develop Controls:	I. Determine Residual Risk:	J. Implement Controls: ("How To")
K. Determine the overall mission/task risk level after controls are implemented (circle one): LOW (L) MODERATE (M) HIGH (H) EXTREMELY HIGH (E)					

Risk-Management Work Sheet