APPENDIX D
ENVIRONMENTAL CONCERNS AND COMPLIANCE

Preparation to conduct operations, in any environment, can incorporate the necessary environmental awareness with minimal additional planning. Many aspects of environmental protection discussed below will appear to be common sense and will most likely be a part of the SBCT's standing operational activity. This appendix provides a guide by which to attain a balance between mission accomplishment and protecting environmentally sensitive areas.

D-1. PREPARATION

Advanced preparation is key to successful mission completion, and the same holds true for environmental awareness and protection. The SBCT commander should be aware of the publications governing environmental protection. All SBCT staffs (company and above) should designate an environmental compliance officer/NCO to serve as the unit's point of contact (POC). This person will be responsible for environmental education, SOP updates, preparation of environmental risk assessments, and incident reporting. Commanders should refer to FM 3-100-4 for guidelines and procedures for applying risk management to identify actions that may harm the environment and steps that can be taken to minimize or prevent damage.

NOTE: FM 3-100.4 gives specific guidance on environmental protection and the SBCT commander should ensure compliance with that guidance. This appendix is intended to supplement, not replace, FM 3-100.4.

D-2. CONDUCT OF THE MISSION

Protecting the environment is always difficult and protecting the environment while conducting operations against a hostile force is not always possible. The SBCT must deploy and operate with minimal environmental damage. Commanders must initiate environmental control measures and establish appropriate protection levels without detracting from mission accomplishment. Environmental concerns pertaining to a mission should be incorporated into the mission briefing based on the factors of METT-TC (Table D-1, page D-2). Some of the factors affecting the briefing include mission, geographical location, and time of the year.

MISSION
1. Identify and assess known environmental risks during planning.
2. Determine environmental impact on mission execution.
3. Specify those areas to avoid and minimize the effect on the unit's scheme of maneuver.
4. Provide maps and or sketches with detailed areas of environmental concern.
5. Emphasize the importance of every soldier playing an active role in the identification and timely reporting of new environmental risk elements.
6. Rapidly and effectively respond to all hazardous waste accidents.
ENEMY
1. Identify areas of probable environmental contamination that could effect friendly force movement.
2. Evaluate intelligence reports of enemy equipment and or capability and how it could be employed against the environment.
3. Develop enemy target options to minimize environmental effects.
4. Maneuver enemy action away from environmentally sensitive areas, when feasible.
TERRAIN AND WEATHER
1. Provide recommended paths of movement to avoid environmentally sensitive areas.
2. Emphasize navigation accuracy and identify well defined terrain features.
3. Obtain and analyze predominant and developing weather patterns to diminish possible environmental risks.
TROOPS AND EQUIPMENT AVAILABLE
1. Develop a briefing for all soldiers that highlights and defines the environmental concerns and points of interest.
2. Provide a detailed and accurate SOP that identifies guidelines for avoiding risk areas while allowing for mission accomplishment.
3. Anticipate areas of probable risk and brief soldiers on how to prevent damage.
4. Incorporate environmental risk scenarios into rehearsals, if possible, to reinforce soldier response and promote the decision-making process to changing environmental risks.
5. Require accurate and timely reports that pertain to any environmental issues, friendly or enemy.
TIME
1. Maximize planning time and minimize complexity of mission brief.
2. Rehearse various mission profiles that emphasize adjusting for changing environmental factors while maintaining the desired momentum.
CIVIL CONSIDERATIONS
1. Avoid unnecessary damage and limit environmental impact to civil infrastructure due to the collateral damage of SBCT operations.
2. Determine how proposed SBCT actions will affect the civilian population in order to determine the "proportionality" of the environmental effects versus the mission benefit.
3. Evaluate what civil environmental factors the enemy may consider his HVTs and integrate this information into the plan.

Table D-1. Environmental risks based on factors of METT-TC.

D-3. RISK ASSESSMENT

The environmental risk assessment considerations contained in this appendix address the potential impact of the SBCT's mission on the environment. The SBCT commander adds other considerations to address local conditions or different mission activities. Using a scale of "0" (no probability of environmental damage) to "5" (extremely high probability of environmental damage), he rates the specific activities the SBCT will perform during an operation. The commander performs this evaluation for each of seven environmental areas. Using sound judgment, the commander considers the conditions under which the SBCT will operate. He then applies this value to the risk assessment matrix. Figure D-1 is an example of a risk assessment matrix and is formatted to allow local reproduction, as required. Refer to Figure D-2, page D-5, for an example of a completed matrix for the environmental area of air pollution. The values assigned are not absolute; different commanders will assign different ratings for the same activity--it is a judgment call based on the commander's assessment.

ENVIRONMENTAL AREA:					RATING	
UNIT ACTIVITY	RISK IMPACT (CIRCLE ONE NUMBER IN EACH ROW.)					
MOVEMENT OF HEAVY VEHICLES AND SYSTEMS	5	4	3	2	1	0
MOVEMENT OF PERSONNEL AND LIGHT VEHICLES/SYSTEMS	5	4	3	2	1	0
ACTIVITIES OF ASSEMBLY-AREA	5	4	3	2	1	0
FIELD MAINTENANCE OF EQUIPMENT	5	4	3	2	1	0
MAINTENANCE CONDUCTED IN LOCALLY CONSTRUCTED MAINTENANCE FACILITIES WITH HARD STAND	5	4	3	2	1	0

Figure D-1. Risk assessment matrix.

D-4. ENVIRONMENTAL FACTORS

Knowledge of environmental factors is key to planning and decision-making. With this knowledge, the SBCT commander can quantify risks, detect problem areas, reduce risk of injury or death, reduce property damage, and ensure compliance with environmental regulations. He should complete environmental risk assessments before conducting operations or logistical activities. The environmental risk assessment matrix provides a deliberate approach to assessing the risk posed by SBCT mission activities on specific environmental areas. (Figure D-2, page D-5, shows an example of a risk assessment for air pollution.) The matrix has four components:

- Environmental area.
- SBCT mission activities.
- Risk impact.
- Risk rating.

D-5. ENVIRONMENTAL AREAS

The risk assessment matrix assesses risk in seven environmental areas. The SBCT commander and staff should develop one matrix for each. These areas are:

- Air pollution.
- Archeological, cultural, and historical resources.
- Hazardous materials and hazardous waste.
- Noise pollution.
- Threatened and endangered species.
- Water pollution.
- Soil, vegetation, and wetland protection.

D-6. SBCT MISSION ACTIVITIES

The risk assessment matrix used in this manual considers five SBCT activities. These activities are generic, and the SBCT may modify them to meet its mission requirements and local conditions. These missions are:

- Movement of heavy vehicles and systems.
- Movement of personnel and light vehicles and systems.
- Activities of the assembly area.
- Field maintenance of equipment.
- Maintenance in locally constructed maintenance facilities with hardstand.

Examples of other activities the SBCT might add are:

- Direct and indirect weapons firing.
- Unexploded ordnance (UXO) operations.
- Aviation support and operations.
- Medical support and operations.
- Mines and demolition.
- Obscurant operations.
- Waterborne or amphibious operations.
- Limited visibility operations.
- NBC operations.

D-7. RISK IMPACT VALUE

The risk impact value estimates the probability that the SBCT's mission will have a negative impact on a particular environmental area. It is a judgment for which the numeric value (0-5) most closely reflects the conditions under which the SBCT is operating. The value is not an absolute, and different commanders might assign different values for the same mission. The risk impact value is a judgment call based on the assessment of the potential for environmental damage. The criteria shown in Figures D-5 through D-11, pages D-8 through D-14, help

commanders evaluate the probability of occurrence. In filling out the matrix, the commander or staff officer circles the value selected for each operation (Figure D-2).

ENVIRONMENTAL AREA: AIR POLLUTION					RATING 15	
UNIT ACTIVITY	RISK IMPACT (CIRCLE ONE NUMBER IN EACH ROW.)					
MOVEMENT OF HEAVY VEHICLES AND SYSTEMS	5	4	(3)	2	1	0
MOVEMENT OF PERSONNEL AND LIGHT VEHICLES/SYSTEMS	5	4	3	2	(1)	0
ACTIVITIES OF ASSEMBLY-AREA	(5)	4	3	2	1	0
FIELD MAINTENANCE OF EQUIPMENT	5	(4)	3	2	1	0
MAINTENANCE CONDUCTED IN LOCALLY CONSTRUCTED MAINTENANCE FACILITIES WITH HARD STAND	5	4	3	(2)	1	0

Figure D-2. Completed environmental risk assessment matrix.

D-8. RISK RATING

The SBCT commander rates the risk for each environmental area (each matrix) by adding the circled risk impact values (Figure D-3, page D-6). A blank copy of the overall risk assessment graph is provided for photocopying (Figure D-12, page D-15). The SBCT commander develops a risk assessment of the entire mission by adding the risk ratings for the individual matrixes on one form. The overall environmental risk falls into one of four categories: low, medium, high, or extremely high (Figure D-4, page D-6). Activities with an extremely high probability of environmental damage require ARFOR/division approval.

	MOVEMENT OF HEAVY VEHICLES/SYSTEMS	MOVEMENT OF PERSONNEL AND LIGHT VEHICLES/SYSTEMS	ASSEMBLY AREA ACTIVITIES	FIELD MAINTENANCE OF EQUIPMENT	MAINTENANCE CONDUCTED IN LOCALLY CONSTRUCTED MAINTENANCE FACILITIES WITH HARD STAND	RISK RATING
AIR POLLUTION	3	1	5	4	2	15
ARCHEOLOGICAL AND HISTORICAL SITES	3	3	0	1	0	7
HAZARDOUS MATERIALS AND HAZARDOUS WASTE	2	1	1	2	0	6
NOISE POLLUTION	1	0	1	0	0	2
THREATENED AND ENDANGERED SPECIES	1	1	0	0	0	2
WATER POLLUTION	5	2	3	2	0	12
WETLAND PROTECTION	5	2	1	2	0	10
OVERALL RATING	20	10	11	11	2	54

Figure D-3. Overall risk assessment.

Category	Range	Environmental Damage	Decision Maker
Low	0 - 58	Little or none	Unit Commander
Medium	59 - 117	Minor	Next higher command
High	118 - 149	Significant	ARFOR/division
Extremely High	150-175	Severe	ARFOR

Figure D-4. Overall environmental risk.

D-9. RISK REDUCTION

The commander addresses each environmental area to reduce risks associated with the mission. While he considers all risk values above “0," he obviously spends more time on risk values of “5" than he does on those valued at “1." If the overall risk is low or medium, the

commander will still review any specific areas rated high or extremely high. He should use his judgment in altering the mission to reduce the risk in this specific area. Many environmental risk reduction measures are simply extensions of good management and leadership practices. Commanders can effectively manage environmental risks using the following six-steps.

a. Step 1. Identify hazards to the environment during mission analysis. Consider all activities that may pollute air, soil, and water. Also consider activities that may degrade natural or cultural resources.

b. Step 2. Assess the probability of environmental damage or violations with environmental risk assessment matrixes.

c. Step 3. Make decisions and develop measures to reduce high risks. Risk reduction measures can include--

- Rehearsals.
- Changing locations or times of operations.
- Increasing supervision.

d. Step 4. Brief chain of command, staff, and appropriate decision-makers on proposed plans and residual risk.

e. Step 5. Integrate environmental measures into plans, orders, SOPs, and rehearsals. Inform subordinates, down to individual soldier level, of risk reduction measures.

f. Step 6. Supervise and enforce environmental standards. Hold those in charge accountable for environmental risk reduction.

D-10. RESIDUAL RISK

Even with all practicable risk reduction measures in place, some risk will remain. This residual risk requires leader attention. Unit commanders inform the chain of command and appropriate decision-makers of residual risk and its implications for the mission. They also inform subordinates and focus command and control efforts onto those portions of the mission.

D-11. SUMMARY

Unit commanders use environmental risk assessment to estimate the potential impact of a mission on the environment. The environmental risk assessment will allow leaders and staffs to identify potential environmental problems before they occur. The process also allows the commander to identify and manage residual risk.

Value	Contributing Factors
5	Current or forecasted weather conditions will contribute to brush fires (dry and windy).
	AO is susceptible to brush fires.
	AO lacks vegetation/pavement and is susceptible to dust formulation.
	Vehicles and equipment are not reliable or well maintained.
	Soldiers are not proficient/experienced in the mission being conducted.
	Command and control is marginal.
	Sustained high OPTEMPO operations are planned.
	Extensive use of external combustion equipment or explosives, incendiary devices, or flares is planned.
4	Current or forecasted weather conditions could contribute to brush fires.
	AO is susceptible to brush fires.
	AO is susceptible to moderate dust formulation.
	Soldiers lack environmental awareness.
	Some high OPTEMPO operations are planned.
	Some use of external combustion equipment explosives, incendiary devices, or flares is planned.
3	Weather is favorable for the mission; winds are within safe operating limits.
	AO is safe from brush fires.
	Soldiers are briefed on hazards of brush fires.
	Command and control is adequate.
2	AO is safe from brush fires.
	AO is not susceptible to dust formulation.
	Soldiers are briefed on hazards of brush fires.
	Soldiers are environmentally conscientious.
	Command and control is good.
1	AO is not susceptible to brush fires.
	Fires are limited, controlled, and allowed only in authorized areas.
	CS (riot-control chemical agent) and obscurants are strictly controlled.
	Vehicles and equipment are well maintained and in good operating order.
	Soldiers are environmentally conscientious.
	Soldiers are thoroughly familiar with fire restrictions.
	Command and control is excellent.
0	No risk/not applicable.

Figure D-5. Air pollution risk impact value.

Value	Contributing Factors
5	Low-visibility, night, or sustained high OPTEMPO operations are planned.
	AO has many archeological, cultural, or historic resources.
	Archeological, cultural, and historic resources are neither identified nor marked off limits.
	Command and control is marginal.
	Soldiers are not familiar with the AO.
4	AO has some archeological, cultural, and historic resources.
	Archeological, cultural, and historic sites are marked off limits.
	Limited visibility operations are planned.
	Command and control is adequate.
	Soldiers are not familiar with the AO.
3	Archeological, cultural, and historic sites are identified and marked off limits.
	Soldiers have been briefed on off limits sites in AO.
	No low-visibility or night operations are planned.
	Command and control is adequate.
2	Archeological, cultural, and historic sites are identified and marked off limits.
	No low-visibility or night operations are planned.
	Command and control is good.
	Soldiers are familiar with the AO.
1	Archeological, cultural, and historic sites are identified and marked off limits.
	Soldiers avoid sites during training, operations, and logistical activities.
	Soldiers are proactive in recognizing, safeguarding, and reporting signs or evidence of possible archeological artifacts or sites.
	Command and control is effective.
	Soldiers are thoroughly familiar with the AO.
	Current or forecasted weather conditions are not an adverse factor.
0	No risk/not applicable.

Figure D-6. Archeological, cultural, and historic resources risk impact value.

Value	Contributing Factors
5	Low-visibility, night, or sustained high OPTEMPO operations are planned.
	Operations are planned close to surface water sources.
	Current or forecasted weather conditions are harsh.
	Soldiers' experience with responding to HM or HW spills is limited or untested.
	Command and control is marginal.
	Soldiers lack environmental awareness.
4	Some high OPTEMPO operations are planned.
	Operations close to water sources are planned.
	Current or forecasted weather conditions are marginal.
	Some individuals are HM/HW qualified.
3	Soldiers are environmentally conscientious but not trained.
	Key HM/HW personnel are available during operations and maintenance activities.
	Adequate spill cleanup materials are available.
	Command and control is adequate.
	Current or forecasted weather conditions are not a factor.
2	Routine operations are planned (soldiers have adequate rest).
	Key HM/HW individuals will oversee high-risk HM/HW operations and maintenance activities.
	Soldiers are environmentally sensitive and HM/HW trained.
	Current or forecasted weather conditions are not a factor.
	Command and control is excellent.
1	Soldiers dealing with HM/HW are well trained and experienced.
	SBCT HM/HW SOP is current (includes accurate HM/HW inventory and location) and fire department is provided with this inventory and location of HM/HW.
	Command and control is excellent.
	HM/HW is transported according to SOP.
	Tempo of operations and maintenance is routine.
	AO is well maintained and unit maintains good housekeeping practices.
0	No risk/not applicable.

Figure D-7. Hazardous materials and hazardous waste risk impact value.

Value	Contributing Factors
5	Sustained high OPTEMPO operations are planned, with noise-generating equipment and activities (artillery, tracked vehicles, weapons firing, construction equipment, aircraft, power generation equipment).
	Operations are conducted in close proximity to the civilian populace.
	Command and control is marginal.
	Soldiers' proficiency in the operation being conducted is marginal.
	Soldiers lack environmental awareness.
	High OPTEMPO limited visibility operations are planned.
4	High OPTEMPO operations are planned with limited noise-generating activities (artillery, tracked vehicles, weapons firing, construction equipment, aircraft, power generation equipment).
	Command and control is adequate.
	Operations are conducted in close proximity to the civilian populace.
	Soldiers lack environmental awareness.
	Reduce levels of limited visibility operations are planned.
3	Level of noise-generating equipment is routine (wheeled vehicles, small generators, small arms fire).
	Civilian populace will be nominally affected.
	Command and control is adequate.
	Limited visibility operations may be conducted.
2	Level of noise generated is nominal.
	Command and control is good.
	Soldiers are environmentally conscientious.
	Limited visibility operations are not likely.
1	Minimum operations or maintenance activities are planned.
	Command and control is highly effective.
	Operations are conducted away from civilian populace.
	Limited visibility operations are not planned.
0	No risk/not applicable.

Figure D-8. Noise pollution risk impact value.

Value	Contributing Factors
5	Threatened and endangered species' habitats are not identified.
	Threatened and endangered species' habitats are not marked off as a restricted area.
	Command and control is marginal.
	Sustained low-visibility or night operations are planned.
	Sustained high OPTEMPO operations are planned.
	Soldiers are not familiar with the AO.
4	Threatened and endangered species' habitats are marked off.
	Limited visibility operations are planned, and the soldiers are inexperienced.
	Command and control is adequate.
	Soldiers are not familiar with the AO.
3	Threatened and endangered species' habitats are marked off.
	Soldiers are briefed on threatened and endangered species.
	Limited visibility operations are planned with experienced soldiers.
	Command and control is adequate.
2	Threatened and endangered species' habitats are identified.
	Threatened and endangered species' habitats are marked off.
	Limited visibility operations are not planned.
	Command and control is good.
	Soldiers are familiar with the AO.
1	Threatened and endangered species' habitats are identified.
	Soldiers know and recognize threatened and endangered species.
	Threatened and endangered species' habitats are marked off as restricted/off-limits areas.
	Soldiers avoid threatened and endangered species' habitats during operations (when possible based upon the factors of METT-TC), and logistical activities.
	Command and control is effective.
	Soldiers are thoroughly familiar with the AO.
0	No risk/not applicable.

Figure D-9. Threatened and endangered species risk impact value.

Value	Contributing Factors
5	Maneuver will cause significant terrain damage.
	Potential hazardous waste spills most likely will affect surface waters (wetlands, groundwater, streams, ditches, sewers, or drains).
	Limited visibility operations are planned.
	Soldiers' environmental proficiency is low.
	Command and control is marginal.
	Sustained high OPTEMPO operations are planned.
	Hazardous waste spill response is marginal or untested.
	Hazardous waste spill response material is not available.
4	Maneuver will cause some terrain damage.
	Potential spill hazard is minimal; will not affect surface waters, wetlands, groundwater, streams, ditches, sewers, or drains.
	High OPTEMPO operations are planned.
	Soldiers' environmental proficiency is somewhat low.
	Command and control is marginal.
3	Potential hazardous waste spill will pose no potential contamination of any water source.
	Routine operations are planned.
	Soldiers are environmentally sensitive.
	Command and control is adequate.
	Weather will not adversely affect operations.
2	Potential hazardous waste spill will pose no potential contamination of any water source.
	Routine operations are planned.
	Soldiers are environmentally sensitive.
	Command and control is good.
	Soldiers are trained in spill-response duties.
	Hazardous waste spill control material is readily available.
1	No potential for hazardous waste spill.
	Soldiers are very environmentally aware.
	Command and control is high.
	Soldiers maintain good housekeeping practices.
	Equipment is well maintained.
	Collection of maintenance wastes is managed properly.
0	No risk/not applicable.

Figure D-10. Water pollution risk impact value.

Value	Contributing Factors
5	Sustained high OPTEMPO operations are planned.
	Command and control is marginal.
	Current or forecasted weather conditions will cause operations to adversely affect wetlands.
	Soldiers lack environmental awareness.
	Soldiers' proficiency in the operation being conducted is marginal.
	Field service or maintenance may have to be done near wetlands.
	Hazardous waste spill response is marginal.
	Hazardous waste spill response materials are not available.
4	Limited visibility operations are planned.
	Command and control is adequate.
	Soldiers are not familiar with the AO.
	Soldiers lack environmental awareness.
	Field service or maintenance may have to be done near wetlands.
3	Soldiers have been briefed on susceptibility of wetlands to damage.
	Limited visibility or night operations are not planned.
	Command and control is adequate.
2	Soldiers are environmentally conscientious.
	Limited visibility operations are not planned.
	Command and control is good.
	Soldiers are familiar with the AO.
1	Maintenance is conducted only in approved areas.
	Wetland areas and boundaries are identified.
	No refueling will be conducted in wetland areas.
	Streams/ditches will be crossed at designated crossings sites.
	Command and control is excellent.
	Soldiers are environmentally conscientious.
	Soldiers are familiar with AO.
	Collection of maintenance wastes is managed properly.
0	No risk/not applicable.

Figure D-11. Wetland protection risk impact value.

	MOVEMENT OF HEAVY VEHICLES/SYSTEMS	MOVEMENT OF PERSONNEL AND LIGHT VEHICLES/SYSTEMS	ASSEMBLY AREA ACTIVITIES	FIELD MAINTENANCE OF EQUIPMENT	MAINTENANCE CONDUCTED IN LOCALLY CONSTRUCTED MAINTENANCE FACILITIES WITH HARD STAND	RISK RATING
AIR POLLUTION						
ARCHEOLOGICAL AND HISTORICAL SITES						
HAZARDOUS MATERIALS AND HAZARDOUS WASTE						
NOISE POLLUTION						
THREATENED AND ENDANGERED SPECIES						
WATER POLLUTION						
WETLAND PROTECTION						
OVERALL RATING						

Figure D-12. Overall risk assessment matrix.