



DEPARTMENT OF THE ARMY
HUNTSVILLE CENTER, CORPS OF ENGINEERS
P.O. BOX 1600
HUNTSVILLE, ALABAMA 35807-4301

REPLY TO
ATTENTION OF

CEHNC-OE-EM-A (200-1c)

24 February 1997

MEMORANDUM FOR Commander, U.S. Army Engineer District,
Huntington, ATTN: CEORH-DL-M (Mr. Richard
Meadows), 502 8th Street, Huntington, WV
25701-2070

SUBJECT: Revised Action Memorandum for the Former West Virginia
Maneuver Area, near Davis, WV, Project Number: G03WV001304

1. Reference the Action Memorandum for the Dolly Sods Wilderness, Former West Virginia Maneuver Area, WV, signed 8 May 1996.
2. Enclosed is a Revised Action Memorandum for the above referenced project number. At the request of the U.S. Forest Service and in consultation with the Huntington District, we have revised the action memorandum to include the area known as Dolly Sods North. These two areas are adjacent to each other and were an original part of the Former West Virginia Maneuver Area, and they are both currently owned by the U.S. Forest Service.
3. The added areas to be cleared in the Dolly Sods North, include hiking trails, camping areas, cabin sites, a trailer dump site, and Blackbird Knob. The hiking trails, with twenty (20) feet on each side, will be cleared to a depth of one (1) foot. There is estimated to be approximately twenty-three (23) miles of recorded trails. Camping areas will be cleared to a depth of four (4) feet. There are 75 recorded camping areas. Cabin sites and the trailer dump site will be cleared to a depth of four (4) feet. There are three (3) recorded cabin sites and one (1) recorded trailer dump site. The Blackbird Knob area is estimated to cover approximately 99 acres and will be cleared to a depth of one (1) foot. Ordnance found during previous field investigations in the former maneuver area, include 4.2", 81mm and 60mm mortar rounds, and a 57mm projectile. There are also reports that 105mm and 155mm projectiles have been found in the area. Blackbird Knob was an identified target site.
4. Live ordnance is still being found and removed from the area by the public, which is creating a hazardous situation. The risk of accidental detonation represents a substantial endangerment to public welfare and environment. The remediation alternatives selected will reduce the risk of ordnance exposure approximately

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50% on the trails and Blackbird Knob area and approximately 60% in the camping, cabin, and trailer dump site areas. Searching and clearing the areas outside of the established trails, campgrounds, Blackbird Knob, cabin sites, and trailer dump site will be unfeasible due to the large area, terrain, and the costs.

5. The enclosed Revised Action Memorandum requires the signature of the Commander, concurring with the alternative proposed. The Ordnance and Explosives (OE) Center of Expertise (CX) concurs with the proposed action. Request a copy of the signed Revised Action Memorandum be returned to this Center prior to the modification to the current Task Order for ordnance removal in the Dolly Sods Wilderness being issued. These proposed actions are currently scheduled to take place during the spring and summer of 1997.

6. Questions regarding this matter should be directed to Mr. Bill Sargent (Project Manager, Huntsville) at 205-895-1562 or facsimile 205-895-1819.

FOR THE COMMANDER:

Encl


C. David Douthat, P.E., CSP
Director, Ordnance and
Explosives Team

CF:

U.S. Department of Agriculture ^{kt} Forest Service, Monongahela
National Forest, Potomac Ranger District, ATTN: District
Ranger, Ms. Nancy Feakes, HC 59, Box 240, Petersburg, WV 26847

**ACTION MEMORANDUM
FORMER WEST VIRGINIA MANEUVER AREA
NEAR DAVIS, WEST VIRGINIA**

I. PURPOSE: The purpose of this paper is to document the proposed ordnance and explosives (OE) removal action for Dolly Sods Wilderness and adjacent Dolly Sods North which were once part of the West Virginia Maneuver Area in central West Virginia.

II. SITE CONDITIONS AND BACKGROUND: This is a non-time-critical removal action to minimize a threat to the public due to the presence of OE.

A. Site Description

1. Removal Site Evaluation: During World War II this site was a part of the 2,181,000-acre West Virginia Maneuver Area. Due to the need for immediate training during World War II, the Secretary of War leased the area on 6 August 1943 from private companies and used it for less than two years for maneuvers and as an artillery and mortar target area for the Thirteenth Army Corps of the Third Army. Apparently it was also used for a few months by the Office of Scientific Research and Development to test fire rockets and projectiles. The site is now operated by the U.S. Forest Service and is open to the public at all times. It is frequently used for hiking, camping, picnics, and hunting. The southern portion has been designated by Congress as a "Wilderness" and is thus a federally protected public area known as Dolly Sods Wilderness. Dolly Sods North, which includes Blackbird Knob (a target site and now a popular recreation area), was privately owned until recent years when it was purchased by the Nature Conservancy and given to the Forest Service in 1992. Within the two areas, the Forest Service has documented approximately 44 miles of mapped trails and 176 camping areas. Other areas of concern are cabins, a trailer dump site, and Blackbird Knob. Although areas were searched and cleared after World War II by military Explosive Ordnance Disposal (EOD) teams, at least three 81-mm mortar shells have been found in recent years by the public in Dolly Sods Wilderness and at least 4 in the vicinity of Blackbird Knob. It has been reported that 105-mm shells have also been found in the area. The U.S. Army Corps of Engineers conducted a Feasibility Study in 1991 and concluded that a hazard to the public exists. During the Feasibility Study remains of 4.2", 57-mm, 60-mm, and 81-mm high explosives and smoke rounds were found.

2. Physical Location: Dolly Sods Wilderness and Dolly Sods North comprise 10,215 acres and approximately 5,000 acres respectively within the Monongahela National Forest in Grant, Tucker, and Randolph Counties of West Virginia. The site is bordered by private property to the north and west (Cabin Mountain) and Forest Service owned land to the east (Bell Knob) and south.

3. Site Characteristics: This portion of the West Virginia Maneuver Area is an undeveloped area of high elevation with wind-swept plains on the Allegheny Plateau. The terrain is rocky and rugged and the plant and animal life is comparable to that of

northern Canada. Notable features include Red Creek and its tributaries, Breathed Mountain, Blackbird Knob, other knobs, and the "sods" or bogs in the level parts of the Wilderness. Animal life is diverse with the only known endangered species being the Cheat Mountain Salamander and, possibly, the Northern Virginia Flying Squirrel. There are also areas of archaeological significance and sensitive plant life.

it is endangered → *it is threatened*

4. Threat to the Environment: Portions of site are known target areas for 81-mm mortars and 105 and 155-mm artillery as well as for field maneuvers. Due to the expedited nature of the training, exact records were not kept or have been lost or destroyed. Live ordnance is still being found and removed from the area by the public, creating a hazardous situation.

5. NPL Status: The site is neither listed nor proposed to be listed on the National Priority List (NPL). Since there are no known toxic contaminants at the site, it will not receive a Hazard Ranking System rating, be evaluated by the Agency for Toxic Substances and Disease Registry, or be referred to the site assessment program.

6. Maps: Maps indicating the firing locations, targets, and locations of discovered ordnance are attached.

B. Other Actions to Date

1. Previous Actions

a. Shortly after operations ended at the Maneuver Area, the artillery range was searched and discovered ordnance destroyed. After hikers continued to find isolated ordnance, military EOD teams again searched the area and destroyed ordnance. However the extent of these efforts is not known and ordnance continues to be discovered by the public and reported to the Forest Service or local sheriffs. In addition to the 7 recorded incidences of recovered ordnance, there are unofficial reports of ordnance found and removed by hikers and hunters.

b. As part of the Defense Environmental Restoration Program, formerly used defense sites were investigated nationwide by the Corps of Engineers. As a result of this investigation, the Corps conducted the 1991 Feasibility Study. The study included searching a sampling of areas considered to most likely have been used as targets or contain overshots or undershots. A total of 281 acres were searched with magnetometers. Thirteen pieces of ordnance were found from 6 to 24 inches beneath the surface. One piece of ordnance was found within several feet of a site used as a campfire pit. It was concluded that further remediation of the site is needed to reduce the risk to the public. It was also concluded that further study was needed of endangered species habitats and means to protect them and of steps to preserve the archaeological value of the area.

→ threatened & endangered

c. To accomplish this the "Dolly Sods Wilderness Ordnance Removal Project Environmental Assessment" was prepared in 1995. Means to protect endangered species, their habitat, and

→ threatened & endangered

archaeologically significant areas were established during the Environmental Assessment (EA) process. A Finding of No Significant Impact was signed by the Commander of the Corps of Engineers, Huntington District and the Supervisor of the Monongahela National Forest in September of 1995. Also more detailed operational instructions, designed to protect the Cheat Mountain Salamander, have been prepared jointly by the U.S. Fish and Wildlife Service and the Corps of Engineers.

d. A risk assessment, using an approach designed specifically for formerly used defense sites containing ordnance, was performed in 1995 for the Wilderness.

e. It was further concluded by the Forest Service and the Corps that Dolly Sods North has almost identical conditions as the Wilderness and that the alternatives considered and conclusions of the Wilderness' EA and Risk Analysis are also applicable to it. Subsequently the Wilderness's EA, Risk Analysis, and operational instructions were adopted for the entire site.

2. **Current Actions:** There are no known actions by the EPA, other regulators, or private entities at this site.

C. State and Local Authorities' Role

1. **State and Local Actions to Date:** Ordnance found onsite is reported to the Forest Service who arranges to have it destroyed in place by an EOD team from Ft. Belvoir, VA. Ordnance removed from the area is often turned over to the local sheriffs who have it destroyed.

2. **Potential for Continued State/Local Response:** Support from the Forest Service, local sheriff departments, and Fort Belvoir should continue.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

A. **Threats to Public Health or Welfare:** The actual amount of ordnance is undetermined but the risk is illustrated by the discovery of ordnance within several feet of a site used as a campfire pit. If the fire had been located over the buried ordnance, there is the likelihood that the ordnance would have detonated, potentially harming several persons. There is also the potential for tent pegs to be driven into buried ordnance or children to find and pick up pieces of ordnance. A high concentration of ordnance is thought to exist within the Red Creek Valley (where campers are commonly found) of the Wilderness. It is projected that between 45,000 and 76,000 visitors visit the Wilderness annually, and another 40,000 visit Dolly Sods North annually.

B. **Threats to the Environment:** Accidental detonation of ordnance has little impact on the environment unless fires are started, as

occurred due to artillery fire when the Maneuver Area was active. Due to its harsh environment the site is extremely slow in recovering from any detrimental activities. (In the early 1900's, fires destroyed the humus layer, leaving the current, relatively infertile rocky terrain.)

IV. ENDANGERMENT DETERMINATION: The risk of accidental detonation of any remaining ordnance, if not addressed, represents a substantial endangerment to public welfare and the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions: Three alternatives were evaluated for the Dolly Sods Wilderness - (1) No Action, (2) clear hiking trails ^(20.8 miles) ~~(40.8 miles)~~ and 20 feet on each side to a depth of one foot, and (3) clear camping areas (101) to a depth of four feet and trails as in alternative 2. For each alternative, the remaining risk to the public was evaluated using the OE Cert methodology, which was specifically developed for the Corps of Engineers to assess sites containing UXO and is now the OE standard for risk assessment. Risk is evaluated based on the potential for an individual to come within the immediate proximity of UXO and the potential consequences. A comparison of the alternatives considered for the Wilderness is provided in the following table, assuming continued high use of the area by the public. (Exposure is defined as a member of the public being present in the immediate proximity to UXO.)

<u>Alt.</u>	<u>Area Remediated (acres)</u>	<u>Projected Exposures</u>	<u>Risk Reduction</u>	<u>Costs</u>
1	None	1258/year	None	None
2	103.7	659/year	47.6%	\$1.23M
3	105.2	517/year	58.9%	\$1.29M

Comparable alternatives were also evaluated for Dolly Sods North - (1) No Action, (2) clear 23 miles of trails and 20 feet on each side (114.3 acres) and 98.9 acres of open land on Blackbird Knob to a depth of 1 foot, and (3) clear 75 camping areas (1.1 acres), 3 cabin sites (1.5 acres), and 1 trailer dump site (0.5 acres) to a depth of 4 feet and the trails and Blackbird Knob as in alternative 2. The risk reduction percentages for the Wilderness' alternatives are considered to be applicable for these alternatives for Dolly Sods North as indicated in the following table.

<u>Alt.</u>	<u>Area Remediated (acres)</u>	<u>Risk Reduction</u>	<u>Costs</u>
1	None	None	None
2	213.1	47.6%	\$2.53M

1. Proposed Action Description: The areas described in alternatives 2 and 3 will be searched by UXO specialists using hand held ordnance detection devices such as metal detectors. If metal is indicated, the area will be excavated by hand to the given depth. Small undergrowth, grasses, and fallen trees will be cleared only if necessary to search an area and only if the area is accessible to hikers, campers, or hunters. Earth will be excavated only if metal objects are detected. Discovered UXO will be destroyed in place or in designated areas by detonation. Before any onsite work commences, trained personnel will work closely with the U.S. Forest Service and the Department of Natural Resources to define potential archaeologically significant areas, sensitive plants, and animal habitats that must be protected and to establish steps to avoid or minimize impacts. Prior to any excavation or detonation, the impacted area will be investigated and endangered or threatened plants and animals removed and archaeologically significant items removed or protected. Disturbed areas will be covered with leaves and other materials found in the area to minimize exposure to the elements.

2. Contribution to Remedial Performance: As noted in the previous tables, remediation alternatives 2 and 3 will reduce the risk of exposures by a projected 47.6% and 58.9% respectively. Lessons learned from other sites indicate that searching and clearing areas outside of the established trails, campgrounds, and open areas will be unfeasible due to the large area, terrain, and costs.

3. Description of Alternative Technologies: In this project there are no practical alternatives to manually searching the areas and detonation in place. It is not safe to move UXO.

4. EE/CA: In lieu of an Engineering Evaluation/Cost Analysis (EE/CA), a Feasibility Study, a separate Risk Assessment, and an EA were performed. The described alternatives were evaluated in the Risk Assessment dated February 1995 and the EA.

5. Applicable or Relevant and Appropriate Requirements (ARARs): Federal ARARs determined to apply to this site are the Defense Environmental Restoration Program (DERP) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Remediation shall be in accordance with the Occupational Safety and Health Administration (OSHA) Standards, the National Contingency Plan, and the Department of Defense Explosive Safety regulations.

6. Project Schedule: For recommended alternative 3, the Corps plans to commence work in May 1997 and complete all work within seven months.

B. Estimated Costs: The total estimated cost is \$3.66M for alternative 2 and \$3.94M for alternative 3.

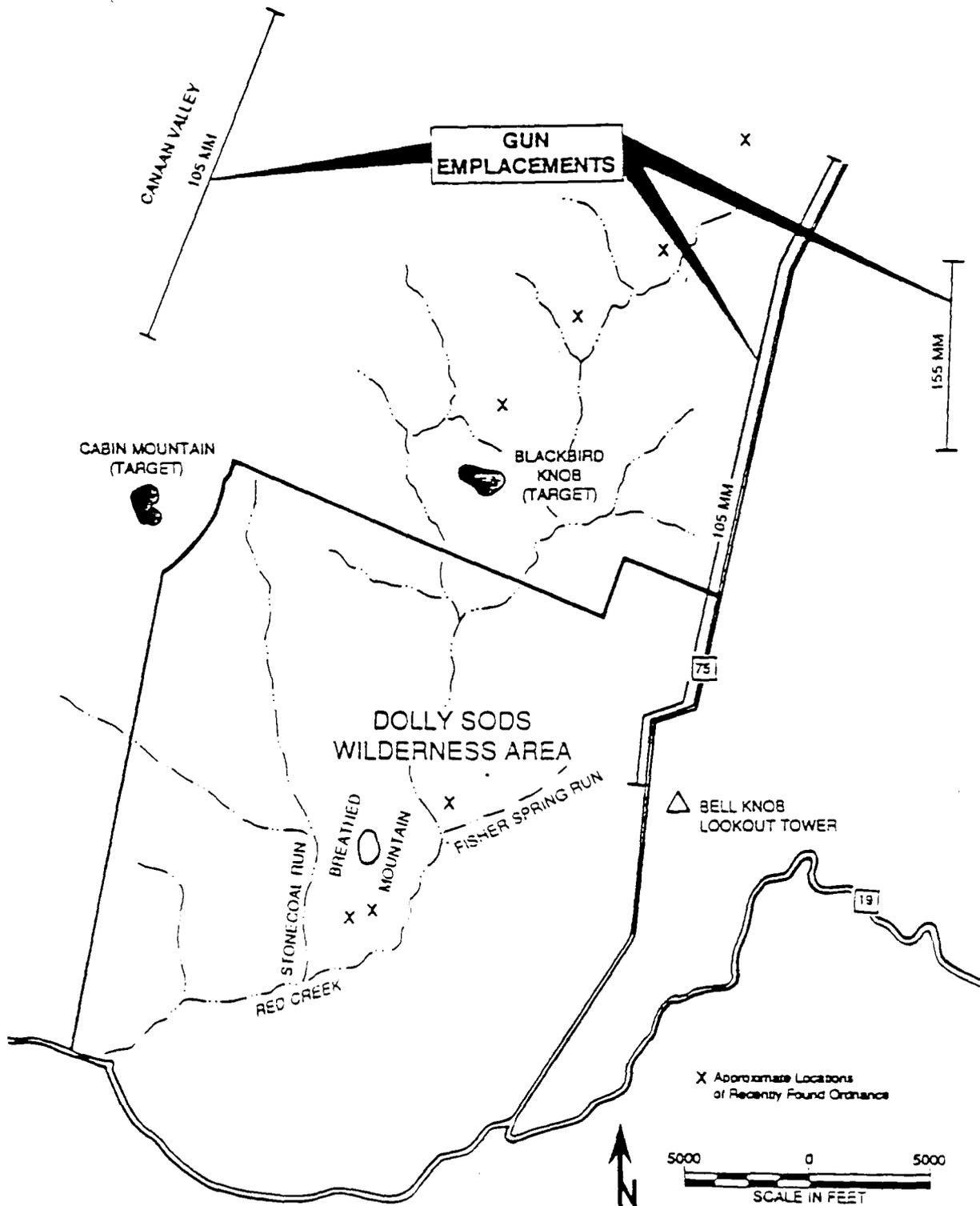
VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN: Popularity of the area is steadily increasing. Consequently the potential for accidental detonation of ordnance and subsequent injury to or death of members of the public will increase as use of the area increases.

VII. Outstanding Policy Issues: Before any onsite work commences, trained personnel will work closely with the U.S. Forest Service and the Department of Natural Resources to define archaeologically significant areas, sensitive plants, and animal habitats that must be protected and to establish steps to avoid or minimize impacts. These steps and procedures will be explained in a workplan.

VIII. Enforcement: Since no nonfederal entities are known to have contributed to the contamination, no enforcement strategy is needed.

IX. Recommendation: For both areas, alternative 3, clearing a total of 316.8 acres to a depth of one foot and 4.6 acres to a depth of 4 feet at a total estimated cost of \$3.94M, is recommended. Alternative 3 is preferred over alternative 2 because with less than a 5% increase in cost, another 24% reduction in the projected risk is achieved. The No Action alternative is not recommended because of the increasing risk to the public.

Dolly Sods Wilderness Ordnance Removal Project



Firing locations and general target areas at Dolly Sods.

FIGURE
DOLLY SODS NORTH ON
POTOMAC DISTRICT
BLACKBIRD KNOB 7.5' QUAD 1967
BLACKWATER FALLS 7.5 QUAD 1967

HUNTING CABINS MAP (WEST)

KEY

- TRAIL
- - - UNIMPROVED BIRT ROAD
- BOUNDARY
- TRAIL #
- - - INTERMITTENT STREAM
- BM BENCHMARK
- POINT OF INTEREST
- WATER
- ▲ HUNTING CABINS



SCALE 1:24,000

CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

FIGURE
DOLLY SODS NORTH ON
POTOMAC DISTRICT
BLACKBIRD KNOB 7.5' QUAD 1967
HUNTING CABINS MAP (EAST)

- TRAIL
- - - UNIMPROVED BIRT ROAD
- BOUNDARY
- TRAIL #
- - - INTERMITTENT STREAM
- BM BENCHMARK
- POINT OF INTEREST
- WATER
- ▲ HUNTING CABINS



SCALE 1:24,000

CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929