



**US Army Corps  
of Engineers**

HUNTSVILLE ENGINEERING  
SUPPORT CENTER

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Defense Environmental Restoration Program  
for  
Formerly Used Defense Sites

Ordnance and Explosives  
Chemical Warfare Materials

**SUPPLEMENT**

TO THE 1994

**ARCHIVES SEARCH REPORT**

FOR

**Camp Chaffee**

Sebastian and Franklin Counties, Arkansas

PROJECT NO. KO6AR000400

September 2002

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Prepared by

US ARMY CORPS OF ENGINEERS

ST. LOUIS DISTRICT

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## **1.0 PURPOSE AND SCOPE**

The original FUDS Archive Search Report (ASR) for Ft. Chaffee was completed in May 1994. The BRAC-ASR was completed in November 1998 (finalized in January 2000).

During preparation of the BRAC-ASR, a retired EOD technician, Mr. Robert Ness, provided a map that showed an area outside the boundary of Ft. Chaffee where he and other EOD technicians had taken care of explosive items. He could not remember the exact items they dealt with.

The area identified by Mr. Ness is a portion of Devil's Backbone that extends out of the Ft. Chaffee boundary near Greenwood, AR. We reported this area to the Little Rock District since it was not addressed in the original FUDS ASR. This supplement is the result of the Little Rock District providing funds to perform additional research regarding this area.

When we called the Little Rock District (Margaret Morehead) to let them know we were starting our work on this project, Ms. Morehead asked us to call Mr. David Burrough, a retired Real Estate division employee of the Little Rock District. Mr. Burrough indicated he had reports of rounds going long into the area along the current east boundary of Ft. Chaffee. He said this area extends from the north boundary of Ft. Chaffee to the Logan County line and is about a mile wide. He initially indicated another area of concern near the Corps of Engineers Lock and Dam, but later retracted that area.

Based on the above information, we began our research and investigation focusing on these two areas.

Since there were two previous research efforts for Ft. Chaffee, we did not perform additional historical document research. We focused our efforts on aerial photography analysis, interviews, and the site visit.

For purposes of this report, Camp Chaffee and Fort Chaffee are used interchangeably.

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## **2.0 HISTORY**

A comprehensive history of Ft. Chaffee is contained in the two previous Archive Search Reports and will not be repeated here. However, a very brief historical summary follows.

Except for a brief period at the end of World War II, and from 1959 to 1961, Ft. Chaffee has been used continuously for ordnance training that ranged from small arms to Honest John rockets.

The two initial areas of concern were never part of Ft. Chaffee and therefore do not appear on any range maps or in any official historical documents regarding Ft. Chaffee.

The only source of information regarding these areas is the initial interviews that raised suspicion and subsequent interviews. We were fortunate to find many people willing to talk to us and help us to, at least partially, reconstruct what took place in these areas. Some people were initially hesitant to talk with us. Only one person refused access to his property.

As a result of the interviews, ordnance presence in the two areas of concern has been confirmed. In addition to the initial areas, our interviews uncovered two other areas of concern outside the Ft. Chaffee boundaries. These areas were documented and investigated.

For purposes of this supplement, the four areas of concern are described as:

Devil's Backbone  
East Area  
Washburn  
Stone Hill

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### **3.0 SUMMARY OF INTERVIEWS**

**Please Note: Interviews are generally grouped according to the area of concern. Some interviewees appear more than once. Some people were interviewed during the site inspection. Please refer to Section 5.0, Site Inspection for text of these interviews. The Conversation Record for the interviews listed below are in Appendix – H, Interviews.**

#### **3.1 Devil's Backbone**

##### **3.1.1. John Miller, Arkansas State Police, EOD**

Officer Miller has been in law enforcement in the area for 32 years, specifically in EOD for 22 years. He is not aware of any ordnance incidents related to areas outside Ft. Chaffee. Offered his services if we find any ordnance during our site visit.

##### **3.1.2 Joyce Cormack, landowner**

Called the Cormack residence to see if they have found ordnance on their property and to get permission to inspect their property. Ms Cormack indicated they have owned the property since 1959 and have never found ordnance. The property is used for cattle farming and hay production. She said that aside from leveling a few mounds, the land has not been excavated. She said it would be OK to inspect the property; they just want us to call before we get on the property.

##### **3.1.3. Ed Thomas property**

Actually spoke with Mrs. Thomas. She said they have lived there since 1949. Their property runs from the flat land up to Devil's Backbone. They have never had an ordnance incident on their property. She said it would be OK for us to inspect their property.

##### **3.1.4 Lavel Durbrow, lives near Devil's Backbone, works for SGM Wacaster**

SGM Wacaster suggested we call Mr. Durbrow. Mr. Durbrow has hunted Devil's Backbone for the past 14 years. Says he hunted the area from the Ft. Chaffee border about one mile to the west. He has never found ordnance. Said we might want to talk with Joyce Cormack's son. He could not remember his name but gave directions to his house.

##### **3.1.5 Marvin Shirley, landowner**

Mr. Shirley owns about 130 acres adjacent to Ft Chaffee just south of Devil's Backbone. He and his wife have owned the land for about 2 years. Called Mr. Shirley to see if he has

found evidence of ordnance on the property and to get permission to inspect the property.

Mr. Shirley said he has been all over the property and has not seen ordnance or craters. When I asked about inspecting the property, he asked if we have credentials and official paperwork regarding the need to be on his property. I explained the FUDS program and told him we have official Corps ID. I also explained that we do nothing to disturb the ground, just walk and take pictures. He asked if we have a court order. I said no and that he can say no. He responded that he doesn't want us on his land. He wasn't rude about it, just said he doesn't want people he doesn't know on his property.

#### 3.1.6 Paul Dunn, landowner

I called Mr. Dunn to see if there have been ordnance incidents on his property and to see if we can inspect his property.

Mr. Dunn is 59 years old and has lived in the area his entire life. He has lived on the property he owns since 1955. There have been no ordnance incidents on his property.

He provided other information regarding nearby land:

Mr. Dunn leases the Roy Clifton property and has for many years. Mr. Dunn said he has been all over the Clifton property and has never found ordnance. He said it would not be a problem to inspect the Clifton property.

Mr. Dunn indicated an ordnance incident occurred near Washburn. He said about 8-10 years ago, the National Guard set up wrong and sent several artillery rounds onto private property owned by people named Rogers. He said the incident was near McCartney Camp Rd. Washburn is about 10 miles southeast of Greenwood along Hwy 10. He said Gary Grimes should know about the incident.

#### 3.1.7. Ken Shook, ranch manager, Patterson properties

The property now owned by Marvin Shirley was previously owned by Patterson Farms. Mr. Shook is not aware of any ordnance being found on the Patterson property in our area of concern.

#### 3.1.8. Gary Grimes, recently retired sheriff of Sebastian County

I called Mr. Grimes on 7/9/02 at the suggestion of Reed Haynes. Mr. Grimes just retired from being Sebastian County sheriff for the past 10 years.

He indicated a large unexploded round was found on Devil's Backbone about 6 yrs ago. Mr. Grimes said he would go with us to the area where the round was found. He said he knows everyone in the area, and getting around the area won't be a problem.

3.1.9. James Fizer, landowner

He has owned the property about 24 years and has not heard of any incidents, nor seen anything that would qualify as ordnance. He gave us permission to inspect his property but did not think we would find anything.

3.1.10. Mrs. Norman Harris, landowner

Her husband passed away but this property has been in his family for years. They were married over 40 years and during that time always lived on this property. She had not heard of any incidents, nor seen anything that would qualify as ordnance. She gave us permission to inspect her property but did not think we would find anything.

3.1.11. Marty Driscoll, landowner

He has owned the property about 1 1/2 years and has not heard of any incidents, nor seen anything that would qualify as ordnance. He gave us permission to inspect his property but did not think we would find anything.

**3.2. East Area**

3.2.1. SGM Wacaster, current range control, Mitch Strunk, former range control

Met with these gentlemen at Ft Chaffee on 4/8/02. SGM Wacaster provided coordinates of 4 rounds that supposedly went outside the boundary:

15S VV 075010, 15 Aug 79, howitzer  
15S VV 070010, 14 Jun 79, 8" howitzer  
15S VV 033055, 14 Jul 81, 4.2 mortar  
15S VV 023048, 14 Jul 81, 105mm

Mr. Strunk indicated an area south of Branch, AR where a 105mm round was found near a house. I indicated it seemed well outside the range of 105mm round, he said it was very likely the round was carried to that location.

3.2.2. Sherman Hiatt, Mayor, Charleston, AR

Actually was a chance meeting with the mayor. Stopped at the fire station to see if there is a sheriff's station in Charleston. After indicating the purpose of the stop, Mr. Hiatt introduced himself as the mayor. He has been mayor for 12 years, has lived in the area for 44 years. He only remembers the 2-8" rounds going into the area east of Ft. Chaffee. When asked about the round described by Mitch Strunk, he said the round was likely carried there. He said they have several incidents of people removing rounds from Ft.

Chaffee.

3.2.3. Reed Haynes, landowner, former chief deputy and sheriff elect of Franklin County, former mail carrier in the area of concern

Called Mr. Haynes to see if he is aware of ordnance on his property and to see if we can inspect his property. Mr. Haynes is like one stop shopping, read on.

Mr. Haynes is 64 years old and has lived in the area his entire life. His family was displaced from their home when the government began buying land for Camp Chaffee; specifically they lived near Potato Hill.

He was Franklin County chief deputy in the late 60's – early 70's and has just been elected sheriff. He drove the mail route that services all of the landowners in the area we are researching on the east side of Ft. Chaffee for 30 years. As a result of living in the area his whole life, carrying mail, and being part of the sheriff's department, he pretty well knows everyone and everything that has gone on in the area.

He said no shells have ever landed on his property. The most recent round to land on private property was on James Young property. He said the range officer, Charles Williams, thoroughly investigated the incident. I told him we knew of an incident in 1981. He said that is the one.

He said there are shell craters in the cemetery on the Wagner property. The nearest home belongs to Ronnie Martin. The craters are near Gunter Ridge.

I asked him about the Bollinger property. He said W. H. Bollinger is deceased and his grandson Isaac Bollinger now owns all of the 1600 acre Bollinger property. 720 acres of this property are in our area of concern. He said there has never been a report of ordnance on the Bollinger property. He said Isaac Bollinger lives in Little Rock, but has a home and a caretaker on the property.

Mr. Haynes wants to go with us when we inspect the area. He says there won't be any problem getting on any of the properties, he knows everyone. He will take us to the known areas where ordnance incidents have occurred. We are to call him the evening of Aug 7 to make final arrangements for the site inspection.

Key people that he suggested we call are:

- Isaac Bollinger – major landowner
- Jerry Russell - landowner
- James Young - landowner
- Ronnie Metcalf – Wagner property

I told him we are also looking at the west end of Devil's Backbone just outside Ft. Chaffee and he said Gary Grimes (461-4333) was the Sebastian County sheriff for 10 years and had been in law enforcement his entire career. Mr. Grimes will be Mr. Haynes chief deputy.

In a later conversation with Mr. Haynes, I asked him about the Herman Haynes property. He said Herman Haynes is his father and he has alzheimers. He said he now has all of his father's land. He indicated a depression on a piece of his father's property that might be a crater.

#### 3.2.4. Isaac Bollinger, landowner

Called Mr. Bollinger to see if there have been ordnance incidents on his property and to see if it is OK to inspect his property.

Mr. Bollinger owns 720 acres in the area of concern on the east side of Ft Chaffee. The land has been in his family for several generations and he recently took ownership of the property shown as owned by W.H. Bollinger (his grandfather). Mr. Bollinger indicated there has never been ordnance found on the property. They have cut hay off about 40% of the land without incident. He says some of the land is wooded and rough. It is OK for us to inspect the property. We are to call his ranch manager, John Miesner, 479-965-7947, before our site inspection. Mr. Miesner has keys to all the gates we need to get through.

Mr. Bollinger was concerned that Ft. Chaffee or we knew of specific problems that he had not been told about. He is concerned about his employees. I assured him that we don't know of a spot on the ground to be concerned about, but rather we are doing research to see if there are any areas of concern.

He said the only problem he's had with Chaffee is their controlled burns get out of control and jump across Rattlesnake Rd. One fire burned down an abandoned house on his property.

We talked about the risk associated with living next to an active military installation and he mentioned the incident at Washburn. He said the rounds were dummy rounds and the only damage done was one of the rounds hit a tree and split a limb. I reminded him that even though he has not found rounds on his property, it is important not to touch ordnance and to report anything he or his employees find to the sheriff.

#### 3.2.5. James Young, landowner

Mr. Young said he knows of at least two suspected craters besides the locations where the two 8" rounds landed on his property. It was hard for him to describe the locations over

the phone, so we are planning to call him when we arrive in Ft. Smith and set up a time to visit with him and mark up our maps.

He said it is OK to inspect any of his property we desire. He owns property in Franklin and Logan Counties. I told him about Reed Haynes believing there are craters near the cemetery. He says that is probably on his property in Logan County.

Tried to call Mr. Young several times after we arrived in Ft. Smith. Could not reach him.

#### 3.2.6. Ron Metcalf, landowner

Mr. Metcalf owns 240 acres on the east side of Ft Chaffee. The purpose of the call was to inquire about ordnance incidents on his property and to get permission to inspect his property. In addition, I was hoping he would have information regarding the entire Wagner Trust property that has been divided among the various heirs. Mr. Metcalf was very helpful. He said he is not aware of any ordnance incidents on his property or any of the Wagner Trust property. He gave permission to inspect his property and said he did not think it would be a problem to be on the former Wagner land. He suggested I call his cousin, former Linda Canfield (now divorced), since her 60 acres are adjacent to Ft. Chaffee. He also suggested I call Kevin Robinson. Mr. Robinson is not an heir but owns 120 acres also adjacent to Ft. Chaffee.

Mr. Metcalf indicated that James Young would probably know more about the Wagner property than anyone else. He said Mr. Young leased the property for hunting and eventually bought a portion of the Wagner property in Logan County.

I told Mr. Metcalf about my conversation with Reed Haynes and that Reed thought there were craters on Wagner property near the cemetery. Mr. Metcalf thought the property that Mr. Haynes is referring to is actually James Young's property in Logan County.

He said the access to his property is on Gas Well Rd, and that Mr. Haynes would know the way. He said the gates look like they're locked but they are not.

#### 3.2.7. Kevin Robinson, landowner

Mr. Robinson owns about 120 acres on the east of Ft. Chaffee in the southern portion of the area of concern. Called Mr. Robinson to see if he has found evidence of ordnance on the property and to get permission to inspect the property.

Mr. Robinson said he has been all over the property and has not seen ordnance or craters, just some low places. Mr. Robinson was cooperative about us inspecting the property, but said he is particular about who gets on his property. I explained that we walk and take pictures and do not disturb the ground. He wanted to know exactly when we would be there. I told him it was hard to set an exact time, but it would probably be Aug 7. I

told him Reed Haynes would be with us and he was less concerned then.

#### 3.2.8. Jerry Russell, landowner

Called Mr. Russell to see if there were ordnance incidents on his property and to see if we can inspect his property. Mr. Russell has lived on the property since 1989. There was a 15' diameter hole near his house that was a shell crater. He has filled in the hole. He said the two 8" rounds that we know of landed on the 40-acre property south of him. That property is now owned by James Young. Mr. Russell said James Young told him of a crater in the mountain on Mr. Young's property about a mile east of the Ft. Chaffee border.

#### 3.2.9. Norman Martin, landowner

Called Mr. Martin to see if he spoke with Daniel Wagner about hand grenades and artillery rounds on the hill on his property. Mr. Martin had no idea what I was talking about, but he provided information just as valuable. He said a round landed on the property that he and his brothers own. The incident occurred when he was a kid (he is now 51). The crater is now filled and he does not know the exact location or size of the round. He said it is in the northwest corner of the 40 acres. He also said his dad told him the round killed a cow. The military reimbursed them for the cow.

#### 3.2.10. Ronnie Martin, landowner

Called Mr. Martin because we were told that he told Daniel Wagner about hand grenades and artillery rounds on the hill on his property. Mr. Martin had no idea what I was talking about, but he provided information just as valuable. He said he was mowing behind the brown brick house next to Reed Haynes property about 12 years ago and found a 105mm round partially buried. Said that Pine Bluff EOD dealt with the round.

### **3.3. Washburn**

#### 3.3.1. Gary Grimes, Retired Sheriff, Sebastian County

I told him several people had mentioned the incident at Washburn and that he would know the details. He said he was not aware of the Washburn incident but will check with his deputies and get us to the right place if at all possible. During this part of the discussion, Mr. Grimes indicated an incident at Stone Hill (near Hwy 22) where a probable 155mm round was found partially buried. He said the round was removed by the proper authorities. He agreed to take us there.

### **3.4. Stone Hill**

#### 3.4.1. Gary Grimes, Retired Sheriff, Sebastian County

I told him several people had mentioned the incident at Washburn and that he would know the details. He said he was not aware of the Washburn incident but will check with his deputies and get us to the right place if at all possible. During this part of the discussion, Mr. Grimes indicated an incident at Stone Hill (near Hwy 22) where a probable 155mm round was found partially buried. He said the round was removed by the proper authorities. He agreed to take us there.

#### **4.0 REAL ESTATE**

The four areas of concern are shown on Plate 2 – General Location, Areas of Concern. Review of the many drawings showing the Camp Chaffee boundary indicated the four areas of concern were never within the boundary of Camp Chaffee.

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## **5.0 SITE INSPECTION**

### **5.1 General**

This site visit was performed during the week of 5 August 2002.

Participants:

Ted Moore	Project Manager
Randy Fraser	UXO Specialist and Safety Officer
Pam Reed	Project Assistant

### **5.2 Analysis of Ordnance Activities**

#### **5.2.1. Devil's Backbone**

Mr. Grimes pointed out the location on the ridge where he removed a 105mm round. He could not remember the exact date but it was early '90's.

Prior to beginning our inspection, we tried to meet with Joyce Cormack as she had requested. She was not at home. We next stopped at Ken Cormack's house (he lives just south of Devil's Backbone), Joyce Cormack's son. He said he hunts on the ridge but has never seen ordnance. He told us he is not surprised about ordnance being found on the ridge. He remembers seeing tank tracks on private property north of this area when he was 10 years old.

Because of the extreme heat, we did not inspect as much of the ridge as we would have liked. We walked about ½ mile to get to the start point on the ridge. We walked about 0.6 miles east to west along the ridge and then went to a lower area on the south side of the ridge to return to the truck. We did not find ordnance, but recorded the approximate coordinates of the location of the 105mm round reported by Mr. Grimes.

#### **5.2.2. East Area**

When we arrived at our meeting location with Reed Haynes, we found that Reed had set up an impromptu meeting with Charlie Williams (former range control officer), and Daniel Wagner and Wade Wagner (heirs to some of the Wagner estate). I have spoken with Charlie Williams during previous Ft. Chaffee research. I'm not exactly sure why Reed wanted us to meet with him. Mr. Williams mostly wanted to make sure we knew that any rounds that went long during his watch were accounted for and dealt with. One item to note, according to Mr. Williams, the round at the Stone Hill incident was in a van and EOD from Pine Bluff was considering blowing up the van. This does not agree with the information we obtained from Gary Grimes who said it was found in a field. Wade Wagner was there to provide information regarding a round that he found on property he owns near Chisolmville (about 6 miles from the Ft Chaffee boundary). He was not sure

of the exact size of the round, but we're guessing it to be a 155mm. He said the round was handled by the Pine Bluff EOD. Daniel Wagner was there to provide information regarding suspected craters that he saw when he was a kid.

After the meeting we drove to the areas that had been described to us. Reed Haynes and Daniel Wagner went with us. We did not inspect some of these areas until after we took these gentlemen back to Charleston. The areas described to us are:

- Suspected craters near Spencer Cemetery.
- Suspected craters described by Daniel Wagner.
- Location of the round found by Wade Wagner.
- Location of the crater on Jerry Russell's property.
- General location where the 8" rounds impacted.
- Location of a suspected crater on Reed Haynes property.

We located the suspected craters near Spencer Cemetery. There are approximately 20 holes scattered over approximately a one acre wooded area. The holes are typically 6-8' diameter and 1-1 1/2' deep. We did not find evidence of frag, but we walked quite a distance through the woods and did not find any other area like it.

We located the suspected craters described by Daniel Wagner. He said he was with his grandfather when he first saw the craters and his grandfather told him the craters were made by artillery rounds. There are approximately 15 holes scattered over a one acre wooded area. The holes are typically 3-4' diameter by 1' deep. We found a piece of metal that appeared to be frag and the magnetometer was indicating a lot of hits. We walked quite a distance through the woods and did not find any other areas like it.

We recorded coordinates for the round found by Wade Wagner.

Jerry Russell took us to the area where he said there was a crater 15' diameter by 12' deep. He filled in the hole and leveled the ground several years ago. We could not find anything in the area to make us believe it was the result of a tree blowing over. We recorded the coordinates of the crater. While we were with Mr. Russell, he pointed us to an area southeast of his property that is owned by James Young. He said Mr. Young told him he found uprooted trees hanging in the top of other trees and suspected it was done by artillery. Mr. Russell also told us that everyone thinks that only 2-8" rounds landed near his house during the 1979-80 incidents, but actually it was three rounds.

We went to the area on James Young's property described by Mr. Russell. We did not find any evidence of ordnance activity.

Reed Haynes described a hole in his field that his front tractor wheel falls into when he is mowing. We found the hole, it is approximately 5' diameter by 1 1/2' deep. We did not get any hits with the magnetometer.

Prior to leaving Mr. Haynes around noon, we told him that we would call him during the evening to see if there was any new information. When we called him, he said Daniel Wagner told him he had spoken with Ronnie Martin regarding grenades and artillery rounds on the hill behind Mr. Martin's house. Our followup phone calls are documented in the interview records elsewhere in this report.

### **5.2.3. Washburn**

Mr. Grimes took us to a body shop owned by Don Lewis (479-996-7616) to obtain more information about the Washburn incident. It took us a while to get things straight. We were told by others we contacted that about 8-9 years ago there was an incident at Washburn regarding 5 rounds that landed on private property along McCartney Camp Rd. Mr. Grimes said he was unaware of the situation and asked Mr. Lewis what he knew about it. Mr. Lewis said it was just a rumor, but called Dean Scarborough to verify. Mr. Dean Scarborough lives near Washburn and verified that indeed it was just a rumor. However, Mr. Grimes remembered he was involved in the removal of two-105mm rounds from private property that borders Ft Chaffee near McCartney Camp Rd. He thought that was perhaps the incident we were referring to. He could not remember the exact date but it was early '90's. While we were with Mr. Don Lewis he tried to call Dewey Lewis and Roger Woods to get confirmation of other rounds that landed on the other side of Hwy 10 just south of the previously described area. The rounds were reportedly found during the late '40's. He could not find either gentlemen, but marked the area on our map. We then drove to the area adjacent to Ft Chaffee and recorded the coordinates where the rounds were found. The property is owned by Boyd Scarborough. We walked the area but did not find any other ordnance. The rounds were disposed of by Pine Bluff EOD.

### **5.2.4. Stone Hill**

Mr. Grimes took us to a location along Hwy 22 that used to be Stone Hill where a 105mm round was found behind a now abandoned service station. The round was blown in place by EOD from Pine Bluff, AR. It apparently was quite an event, road closure, news media, etc. Mr. Grimes is not sure of the vintage of the round but he said it was not rusty like the others he has dealt with. He could not remember the exact date but it was early '90's. We walked around the area where he saw the round. We did find any other ordnance.

## **5.3 Current Site Characterization**

### **5.3.1. Devil's Backbone**

The soil is thin clay overlaying rock and rock outcrops. There are many residences within 2 miles of the location of the 105mm round, at least 25.

### **5.3.2. East Area**

There are at least 20 residences/farmsteads within 2 miles of the rounds/craters described by the Martins and Jerry Russell, some within 100'. The soil in these areas is clay.

The suspected craters are within two miles of many residences and farm buildings, but the nearest structures are more than one mile away. The soil consists of clay mixed with cobbled stone and scattered rock outcrops.

### **5.3.3. Washburn**

At the time the ordnance was found, there was only one residence near the rounds. Today there are now at least 20 residences within two miles of the location. The soil in this area is clay.

### **5.3.4. Stone Hill**

There are now at least 20 residences within two miles of the location. The soil in this area is clay.

## **6.0 Aerial Photography Analysis**

Aerial photography covering the East Area was obtained for photo years 1954, 1979, 1984, and 2001. Aerial photography covering the Devil's Backbone Area was obtained for photo years 1954, 1976, 1987, and 1998. This photography was obtained prior to our knowledge of Washburn and Stone Hill. Photography analysis did not indicate any ordnance activity in either area.

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## **7.0 EVALUATION OF ORDNANCE PRESENCE**

Three types of ordnance (artillery rounds) are discussed in this report; 105mm, 155mm, and 8". Data sheets for these rounds can be found in Appendix C – Text/Manuals.

Range control at Ft. Chaffee reported four rounds to us. Only two of these rounds are discussed below. The other two rounds landed within, or at, the boundary of Ft. Chaffee with no reports of other rounds in the area. We consider the latter two rounds to be isolated incidents that do not require further discussion.

### **7.1. Devil's Backbone**

See Plate 6 – Devil's Backbone Area.

This area of concern is a result of first hand information obtained from an EOD technician, Mr. Robert Ness. Mr. Ness was involved in ordnance cleanup of this area. The area of concern is a rocky ridge that extends out of Ft Chaffee to the east near Greenwood, AR. The ridge is surrounded north and south by predominantly clear farmland. There are many homes within one mile of the ridge. There is one home on the ridge.

We interviewed many landowners and others associated with the site. The only other person beside Mr. Ness who verified ordnance use in this area is Mr. Gary Grimes, retired sheriff of Sebastian County. Mr. Grimes saw what we suspect was a 105mm round. As sheriff, he was responsible for safe removal of the round. All others interviewed indicated no ordnance incidents on the ridge or surrounding land.

Based on the above information, it is likely that any remaining ordnance is on the ridge and not on the land below the ridge, as shown on Mr. Ness' drawing.

### **7.2. East Area**

See Plate 3 – East Area and Plate 4 – East Area, Artillery Fire Zone.

This area of concern is a result of our interview with Mr. David Burrough, retired Little Rock District Real Estate Division employee. Mr. Burrough said he spoke with several people in the area over the years who indicated that rounds went long from Ft. Chaffee. The area he described extends one mile wide from the east border of Ft. Chaffee, from the north border of Ft. Chaffee to the Franklin/Logan County border.

There is, in fact, significant evidence that rounds went long into this area. Three 8" rounds went long during two incidents in the 1979-80 timeframe. These incidents were reported by range control at Ft. Chaffee and confirmed by local residents. Three other rounds were reported by local residents. The dates these rounds landed are unknown, but the evidence is first hand and credible. Three areas of suspected craters were reported.

We cannot confirm the depressions are craters, but the shape and size of the depressions, as well as the fact that the depressions are clustered with no other depressions nearby, makes them highly suspicious.

It is almost certain the rounds went long as a result of artillery firing toward Potato Hill. If lines are drawn from the north and south ends of artillery firing positions, through Potato Hill and extended outside the Ft. Chaffee boundary into the area of concern, the resulting fan basically encompasses the reported ordnance. We cannot definitely say this is the extent of the contaminated area, but the information obtained from interviews makes it likely that the contaminated area is the south half of the area described by Mr. Burrough.

The rounds reported by Mitch Strunk and Wade Wagner were likely carried to those locations. The distances from firing positions on Ft. Chaffee to these locations make it almost impossible for the rounds to have gone long from the Fort.

### **7.3. Washburn**

See Plate 5 – Washburn Area.

This is an area of concern as a result of information obtained from Mr. Gary Grimes and confirmed by local residents. The area of concern is flat land that borders Ft. Chaffee near Washburn, AR. Mr. Grimes personally saw and dealt with two-105mm rounds found by his deputies on land owned by Boyd Scarborough. The other information is anecdotal evidence of rounds found shortly after World War II on property just south of Hwy 10 in Washburn.

The areas of concern shown on Plate 5 are our best estimate of the potentially contaminated areas.

### **7.4. Stone Hill**

This is an area of concern as a result of information obtained from Mr. Gary Grimes and confirmed by Mr. Charles Williams (former range control officer at Ft. Chaffee). The area of concern is flat land that borders Ft. Chaffee near Stone Hill, AR. Mr. Grimes personally saw and dealt with one-105mm round. There is a bit of difference in the story between Mr. Grimes and Mr. Williams. We believe Mr. Grimes' version is more accurate since he was there. Based on the information provided by Mr. Grimes, we believe this was an isolated incident, since there are no other reports or evidence of ordnance in the area. It is likely the ordnance was carried to this area.

## **7.5. Technical Data of Ordnance and Explosives**

### **7.5.1 Description of Ordnance**

Positive identification for munitions that have been found, or detonated, on property outside the Ft. Chaffee boundaries were not positively identified. The following munitions are a selection of typical projectiles fired for training on artillery ranges. They are provided as a representation and are not all-inclusive. Illustrations of each can be found in Appendix C.

105mm HE, M1  
105mm, TP-T, M67  
105mm Smoke, HC  
105mm, Smoke, WP, M60  
105mm, Illuminating, M314A3  
155mm, HE, MKI  
155mm, HE, M107  
155mm, Shrapnel, MKI  
155mm, Smoke, WP, M110  
155mm Smoke, WP, M104  
155mm Illuminating, M485 series  
155mm, Illumination, M118  
155mm Practice, M804  
155mm, AP, M112  
8-inch, HE, M106

### **7.5.2 References**

NAVSEA OP 1664, Vol 1, *U.S. Explosives Ordnance*, May 1947  
NAVSEA OP 1664, Vol 2, *U.S. Explosives Ordnance*, February 1954  
TM 9-1904, *Ammunition Inspection Guide*, March 1944  
*Complete Round Chart No. 5981*, January 1940  
TM 43-0001-28, *Army Ammunition Data Sheets, Artillery Ammunition*, April 1977  
TM 43-0001-28, *Army Ammunition Data Sheets, Artillery Ammunition*, April 1994  
*Bureau of Naval Weapons, Fourth Consolidated Report of BW/CW Study*, March 1961  
TM 9-1901, *Artillery Ammunition*, September 1950

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## **8.0 CONCLUSIONS**

The goal of this ASR Supplement effort was to confirm, if possible, the presence of ordnance in the two originally reported areas outside the boundary of Ft. Chaffee. Our research has confirmed ordnance presence in these two areas (Devil's Backbone and the East Area) plus two other areas (Washburn and Stone Hill) that we knew nothing about at the beginning of our work.

Three of the four areas of concern are worthy of further investigation; Devil's Backbone, East Area, and Washburn. Although the three-8" rounds that went long into the East Area in 1979-80 have been accounted for, and appear to be isolated incidents, the other ordnance incidents in these three areas of concern indicates that all ordnance probably has not been found.

Individual Risk Assessment Procedure Form (RAC) scores have been computed for the three areas of concern we believe are worthy of further investigation. Copies of the RAC Forms are included in Appendix A-1 – Risk Assessment Procedure Form.

Devil's Backbone	RAC 1
East Area	RAC 1
Washburn	RAC 1

The 155mm round found by Wade Wagner was likely dumped there. It was 14 miles from the firing points on Ft Chaffee. We do not recommend further investigation of this incident.

The 105mm round reported by Mitch Strunk was likely dumped there. It was 11 miles from the firing points on Ft. Chaffee. We do not recommend further investigation of this incident.

The round found at Stone Hill was likely carried there according to Charles Johnson. According to Mr. Grimes, the round looked very new compared to other rounds he has seen. A review of maps showing the Ft. Chaffee boundary indicate the boundary is very close to Hwy 22 at this location. The round may have been just across the fence on Ft. Chaffee property. We do not recommend further investigation of this incident.

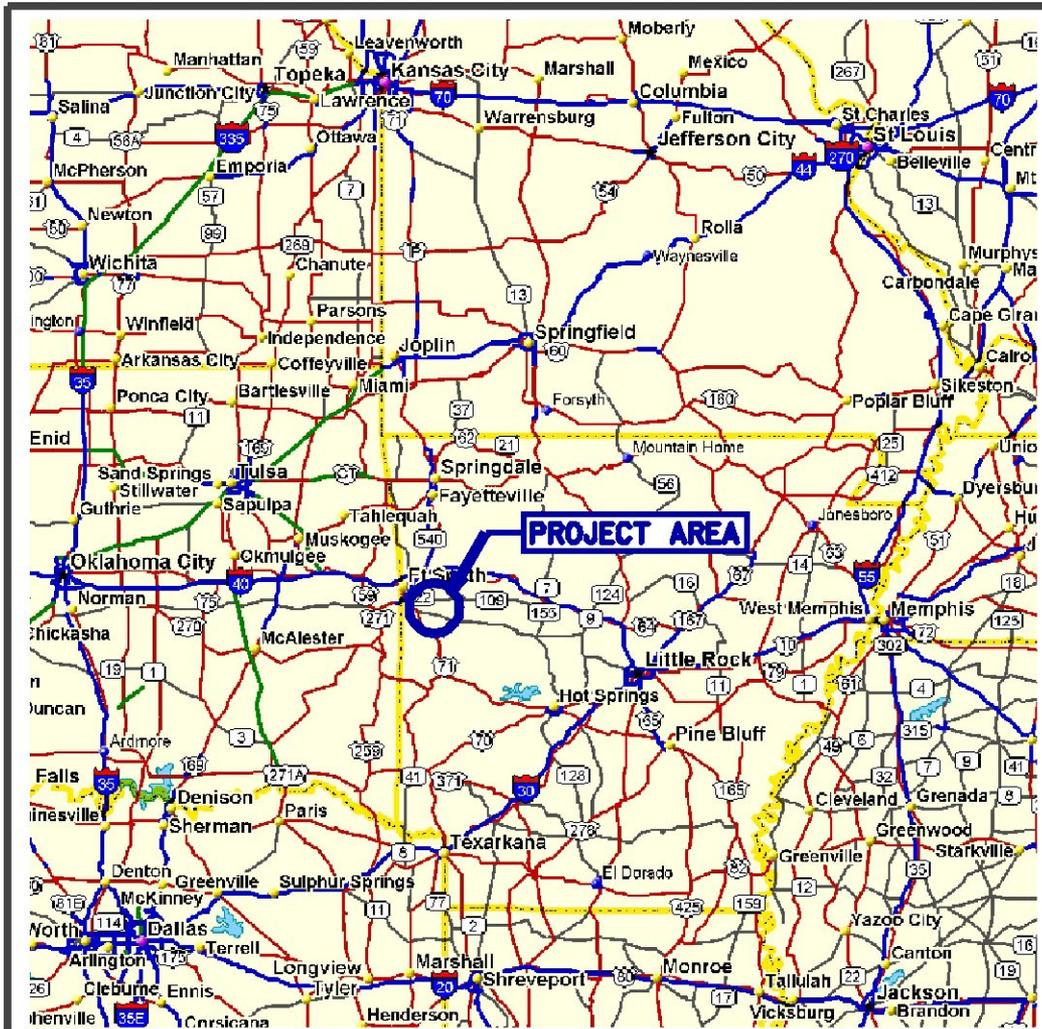
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## **PLATES**

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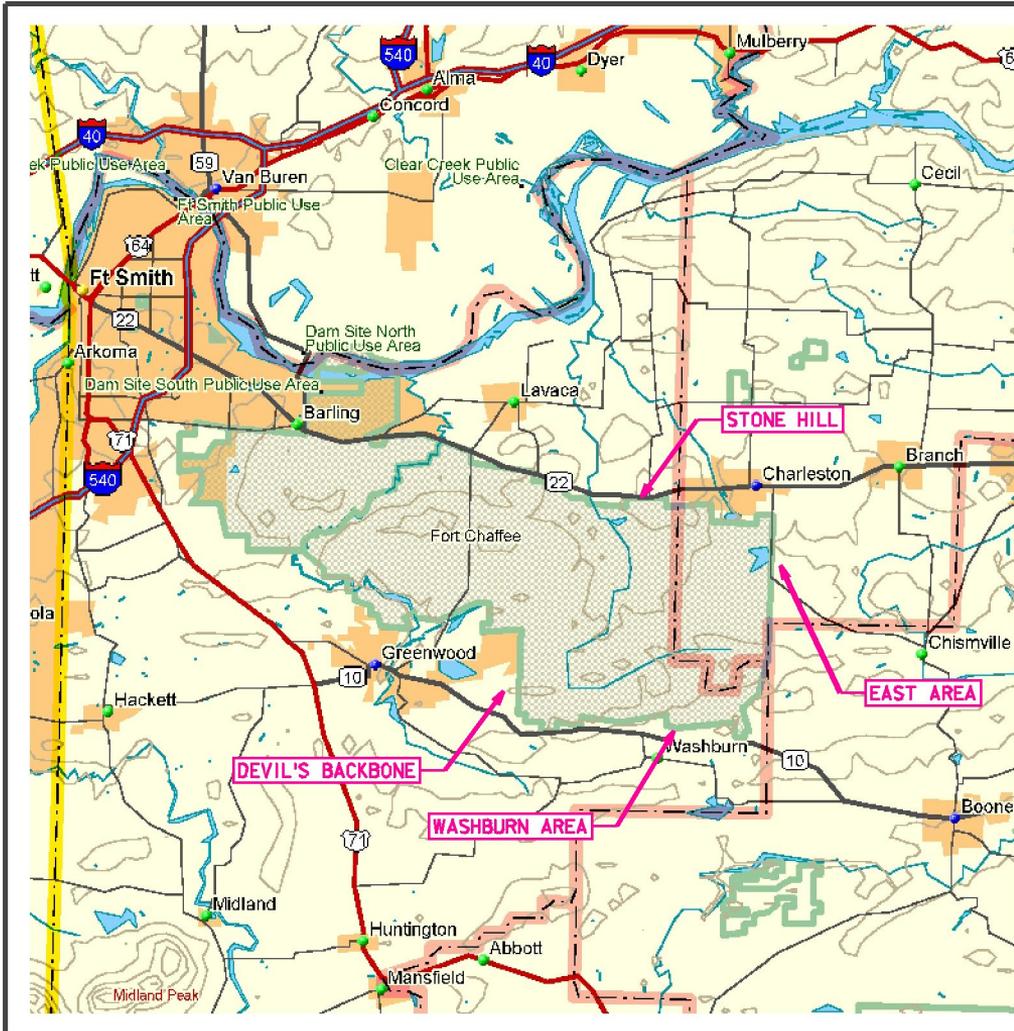
<b>PLATES</b>	<b>DESCRIPTION</b>
<b>Plate 1</b>	<b>Vicinity Map – Camp Chaffee</b>
<b>Plate 2</b>	<b>General Location, Areas of Concern</b>
<b>Plate 3</b>	<b>East Area</b>
<b>Plate 4</b>	<b>East Area, Artillery Fire Zone</b>
<b>Plate 5</b>	<b>Washburn Area</b>
<b>Plate 6</b>	<b>Devil's Backbone Area</b>
<b>Plate 7</b>	<b>East Area, Owners Contacted</b>
<b>Plate 8</b>	<b>Devil's Backbone, Owners Contacted</b>

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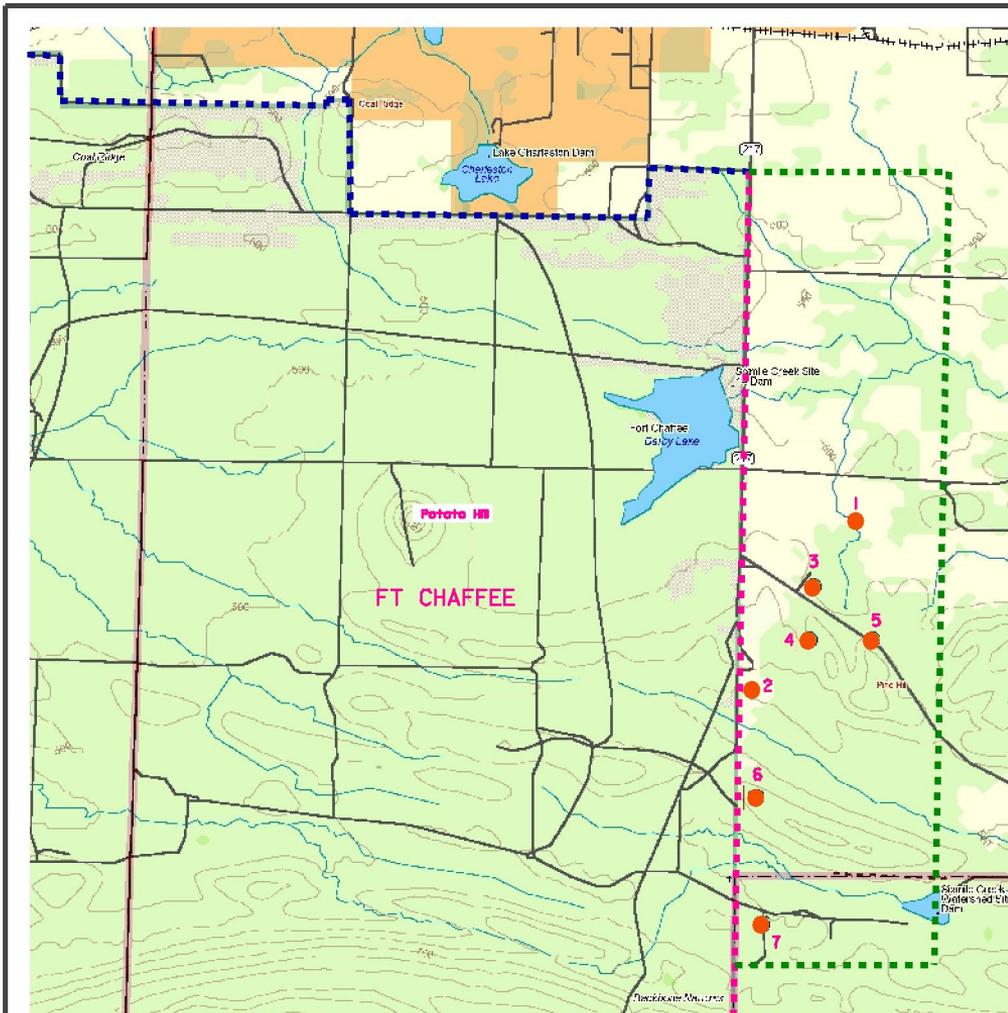
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	<b>CAMP GRAFFER          ASR SUPPLEMENT          SEBASTIAN AND FRANKLIN          COUNTIES, ARKANSAS          PROJECT #K06AR000400          VICINITY MAP</b>	
DESIGN DATE: SEP 2002 DATE OF SCALE: 08/28/2002	DRAWN BY: JMM/02	<b>PLANNING NO. 1</b>

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	U.S. ARMY CORPS OF ENGINEERS ST. LOUIS DISTRICT	
	<b>CAMP CHAFFEE          ASR SUPPLEMENT          SEBASTIAN AND FRANKLIN          COUNTIES, ARKANSAS          PROJECT #K06AR000400          GENERAL LOCATION, AREAS OF CONCERN</b>	
PROJ. DATE: SEP-2000 09/28/2000	DATE OF QUOTE: 10/26/2000	PLATE NO. <b>2</b>

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- 1 106mm round found by Ronnie Martin  
UTM 15S 0407430E, 3901830N  
Lat/Lon N 35.25715, W 94.01742
- 2 Crater on Martin Property  
UTM 15S 0406710E, 3901100N  
Lat/Lon N 35.25052, W 94.02353
- 3 Crater on Jerry Russell Property  
UTM 15S 0407100E, 3901270N  
Lat/Lon N 35.25210, W 94.02114
- 4 8" round  
UTM 15S 0407060E, 3900840N  
Lat/Lon N 35.24820, W 94.02152
- 5 2-8" rounds  
UTM 15S 0407570E, 3900840N  
Lat/Lon N 35.24820, W 94.01583
- 6 Possible craters reported by Danny Wagner  
UTM 15S 0406550E, 3900780N  
Lat/Lon N 35.24485, W 94.02737
- 7 Possible craters near Spencer Camerary  
UTM 15S 0406620E, 3900570N  
Lat/Lon N 35.22763, W 94.02571



- ■ ■ Ft Chaffee Boundary
- ■ ■ East Area Boundary



U.S. ARMY CORPS OF ENGINEERS  
ST. LOUIS DISTRICT

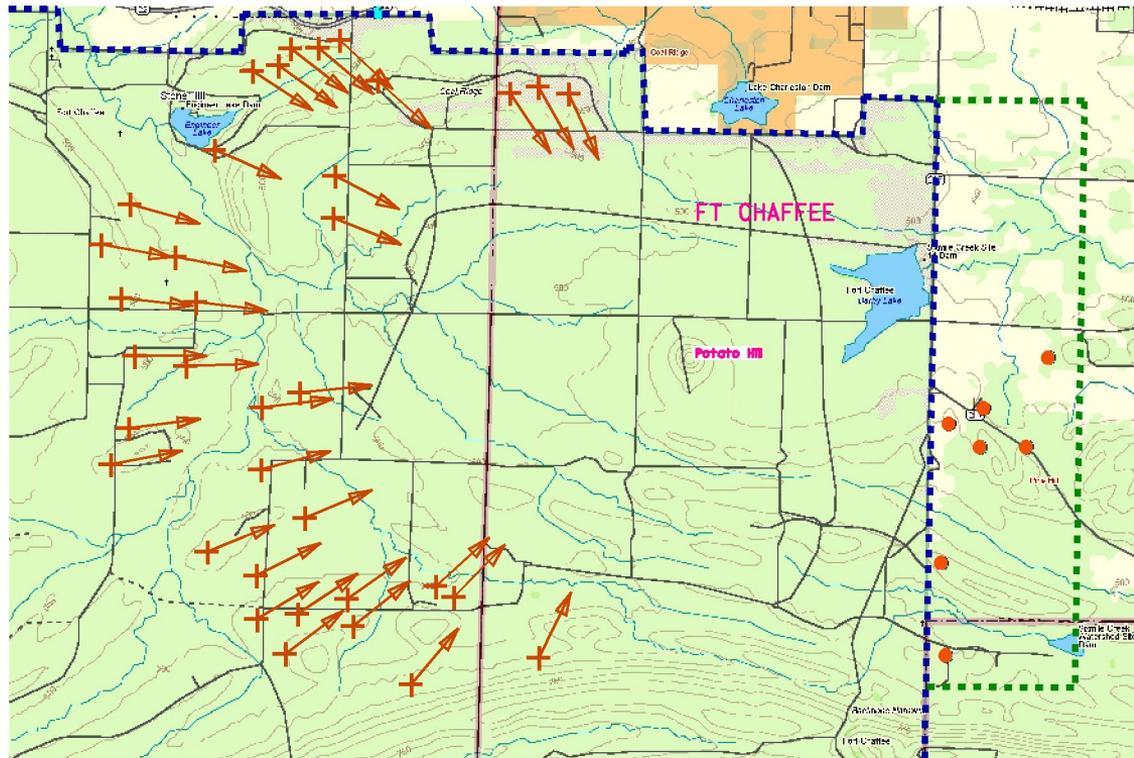
**CAMP CHAFFEE  
ASR SUPPLEMENT  
SEBASTIAN AND FRANKLIN  
COUNTIES, ARKANSAS  
PROJECT #K06AR000400  
EAST AREA**

PROJ. DATE: SEP-2000  
09/28/2000

DATE OF QUOTE:  
September 2000

PLATE NO. **3**

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-  Firing Pts (Approx Location)
-  Direction of Fire, Target-Potato Hill
-  Ordnance Incidents
-  Ft Chaffee Boundary
-  East Area Boundary



U.S. ARMY CORPS OF ENGINEERS  
ST. LOUIS DISTRICT

**CAMP CHAFFEE  
ART SUPPLEMENT  
SEBASTIAN AND FRANKLIN  
COUNTIES, ARKANSAS  
PROJECT \*K06AR000400  
EAST AREA, ARTILLERY FIRE ZONE**

PROJ. DATE: SEP-2000

DATE OF QUOTE:  
09/28/2000

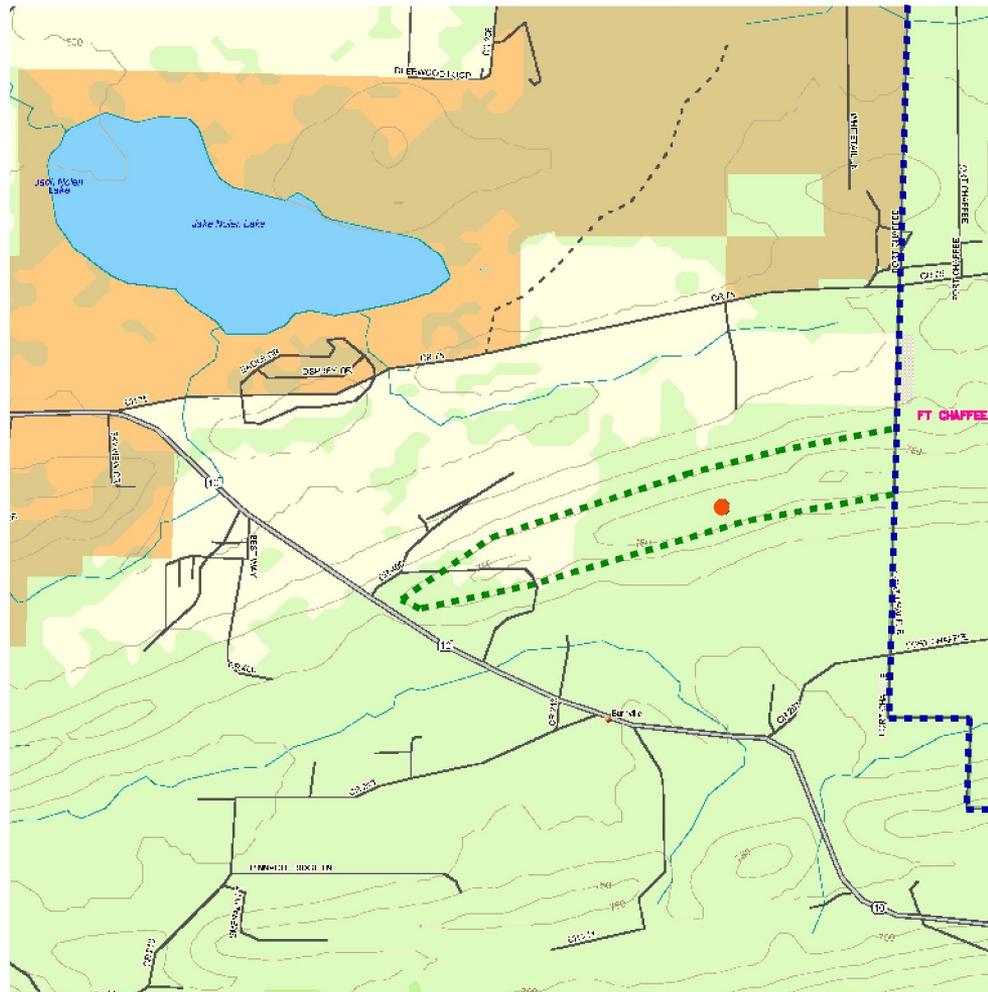
PLATE NO. **4**

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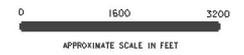


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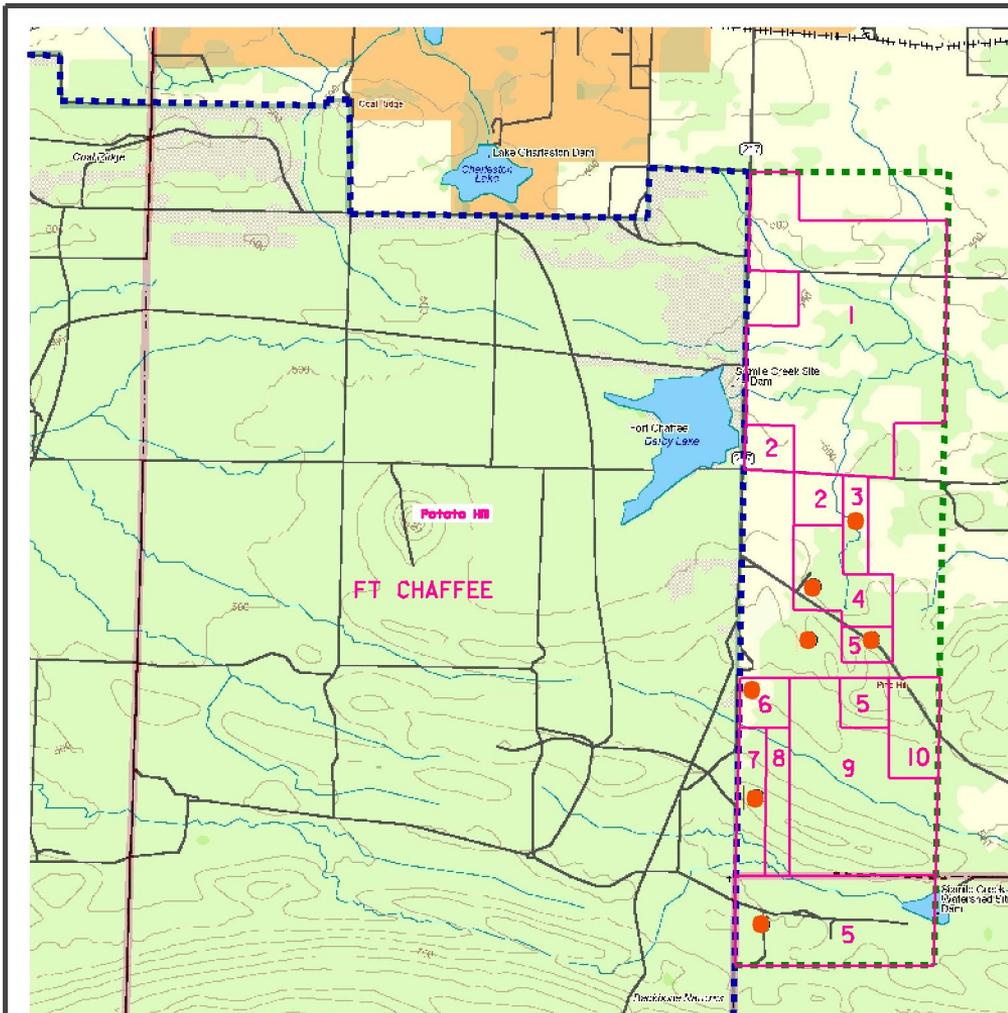
- 105mm round
- Ft Chaffee Boundary
- Devil's Backbone Area of Concern (Approx. 180 ac)

USS 0382345E, 3895461N  
 N 35.198015, W 94.16254



	U.S. ARMY CORPS OF ENGINEERS ST. LOUIS DISTRICT	
	<b>CAMP CHAFFEE          ASR SUPPLEMENT          SEBASTIAN AND FRANKLIN          COUNTIES, ARKANSAS          PROJECT #K08AR000400          DEVIL'S BACKBONE AREA</b>	
PROJ. DATE: SEP-2000 09/28/2002	DATE OF QUOTE: 10/27/2002	PLATE NO. <b>6</b>

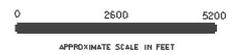
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- 1 Isaac Bollinger
- 2 Herman Haynes & Reed Haynes
- 3 Reed Haynes
- 4 Jerry Russel
- 5 James Young
- 6 Norman and Ronnie Martin
- 7 Linda Canfield
- 8 Kevin Robinson
- 9 Ronnie Martin & Wagner Trust
- 10 James Young & Wagner Trust

● Ordnance Incidents - see Plate 3

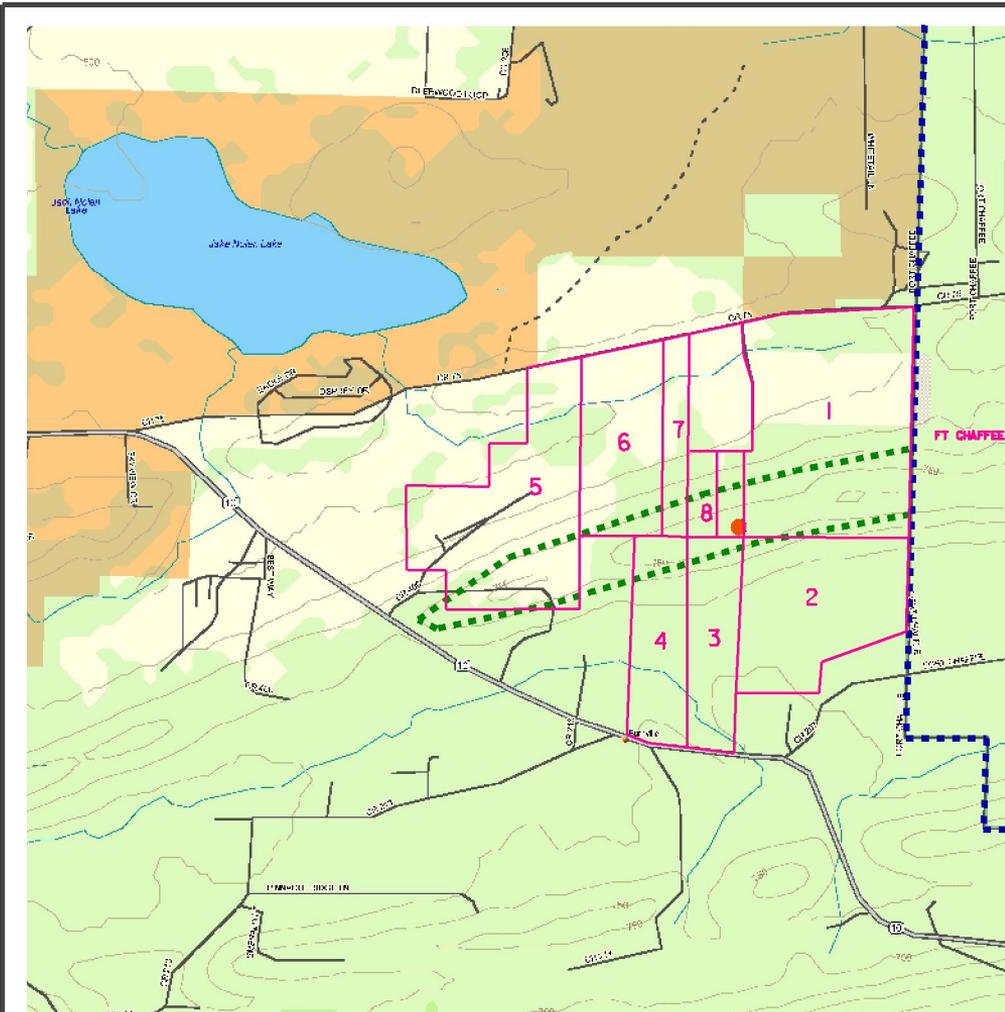
- ■ ■ Ft Chaffee Boundary
- ■ ■ East Area Boundary



U.S. ARMY CORPS OF ENGINEERS  
ST. LOUIS DISTRICT

**CAMP CHAFFEE  
ASR SUPPLEMENT  
SEBASTIAN AND FRANKLIN  
COUNTIES, ARKANSAS  
PROJECT #K06AR000400  
EAST AREA, OWNERS CONTACTED**

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- 1 Larry Williams
- 2 Marvin Shirley
- 3 Marlon Driscoll
- 4 Ed Thomas
- 5 Charles Cermak
- 6 Paul Dunn
- 7 James Fizer
- 8 Norman Harris

- Ordnance Incident (see Plate G)
- Ft Chaffee Boundary
- Devil's Backbone Area of Concern

	U.S. ARMY CORPS OF ENGINEERS ST. LOUIS DISTRICT	
	<b>CAMP CHAFFEE          ASR SUPPLEMENT          SEBASTIAN AND FRANKLIN          COUNTIES, ARKANSAS          PROJECT #K08AR000400          DEVIL'S BACKBONE, OWNERS CONTACTED</b>	
PROJ. DATE: SEP-2000 09/28/2002	DATE OF QUOTE: 10/28/02\cort.bono@ceers.usg.mil	<b>PLATE NO. 8</b>

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**APPENDIX A-1**  
**RISK ASSESSMENT PROCEDURE FORM**

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**APPENDIX A-1 – RISK ASSESSMENT PROCEDURE FORM**

**PAGE            DESCRIPTION**

**A-1-1**  
**Camp Chaffee – Devil's Backbone – RAC 1**

**A-1-2**  
**Camp Chaffee – Washburn – RAC 1**

**A-1-3**  
**Camp Chaffee – East Area – RAC 1**

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**Camp Chaffee  
Devil's Backbone**

**A-1-1**

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RISK ASSESSMENT PROCEDURES FOR  
 ORDNANCE AND EXPLOSIVES (OE) SITES

Site Name: **Camp Chaffee – Devil’s Backbone** Rater’s Name: Moore  
 Site Location: Ft. Smith, AR Phone Number: 314/331-8249  
 DERP Project # K06AR000400 Organization: CEMVS-ED-DC  
 Date Completed: 04 September 2002 Score: **1**

OE RISK ASSESSMENT:

This risk assessment procedure was developed in accordance with MIL-STD 882C and AR 385-10. The Risk Assessment Code (RAC) score will be used by the U.S. Army Engineering and Support Center, Huntsville (USAESCH), Ordnance and Explosives Team (USAESCH-OE) to prioritize the remedial action(s) at Formerly Used Defense Sites (FUDS). The risk assessment should be based upon best available information resulting from records searches, reports of Explosive Ordnance Disposal (EOD) Detachments actions, field observations, interviews, and measurements. This information is used to assess the risk involved based upon the potential OE hazards identified at the site. The risk assessment is composed of two factors, hazard severity and hazard probability. Personnel involved in visits to potential OE sites should view the USAESCH-OE videotape entitled "A Life Threatening Encounter: OEW."

PART I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of unexploded ordnance items.

TYPE OF ORDNANCE: (Circle all that apply)

A. Conventional Ordnance and Ammunition:	VALUE
Medium/Large Caliber (20mm and larger)	10
Bombs, Explosive	10
Grenades, Hand or Rifle, Explosive	10
Landmine, Explosive	10
Rockets, Guided Missile, Explosive	10
Detonators, Blasting Caps, Fuzes, Boosters, Bursters	6
Bombs, Practice (w/spotting charges)	6
Grenades, Practice (w/spotting charges)	4
Landmine, Practice (w/spotting charges)	4
Small Arms, Complete Round (.22 cal - .50 cal)	1
Small Arms, Expended	0
Practice ordnance (w/o spotting charges)	0
Conventional Ordnance and Ammunition (Largest single value)	<u>10</u>

What evidence do you have regarding conventional unexploded ordnance? **An unexploded 105mm artillery round was found on Devil’s Backbone about ¼ mile from a residence.**

B. Pyrotechnics (for munitions not described above):	VALUE
Munitions (Containers) containing White Phosphorus (WP) or other Pyrophoric Material (i.e., Spontaneously Flammable)	10
Munitions containing a flame or incendiary material (i.e., Napalm, Triethylaluminum Metal Incendiaries)	6
Flares, Signals, Simulators, Screening Smokes (other than WP)	4
Pyrotechnics (Select the largest single value)	<u>0</u>
What evidence do you have regarding pyrotechnics? <b>None</b>	

C. Bulk High Explosives (Not an integral part of conventional ordnance; uncontainerized):	VALUE
Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Demolition Charges	10
Secondary Explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Military Dynamite	6
Less Sensitive Explosives (Ammonium Nitrate, Explosive D, etc.)	3
High Explosives (Select the largest single value)	<u>0</u>
What evidence do you have regarding bulk explosives? <b>None</b>	

D. Bulk Propellants (Not an integral part of rockets, guided missiles, or other conventional ordnance; uncontainerized):	VALUE
Solid or Liquid Propellants	6
Propellants	<u>0</u>
What evidence do you have regarding bulk propellants? <b>None</b>	

E.	Chemical Warfare Materiel (CWM) and Radiological Weapons:	VALUE
	Toxic Chemical Agents (Choking, Nerve, Blood, Blister)	25
	War Gas Identification Sets	20
	Radiological	15
	Riot Control Agents (Vomiting, Tear)	5
	Chemical and Radiological (Select the largest single value)	<u>0</u>
	What evidence do you have regarding chemical/radiological OEW? <b>None</b>	

TOTAL HAZARD SEVERITY VALUE

(Sum of the Values for A through E--Maximum of 61) 10  
 Apply this value to Table 1 to determine Hazard Severity Category.

TABLE 1

HAZARD SEVERITY\*

<u>DESCRIPTION</u>	<u>CATEGORY</u>	<u>HAZARD SEVERITY VALUE</u>
CATASTROPHIC	I	21 and/or greater
CRITICAL	II	10 to 20
MARGINAL	III	5 to 9
NEGLIGIBLE	IV	1 to 4
**NONE V	0	

\* APPLY HAZARD SEVERITY CATEGORY TO TABLE 3.

\*\* IF HAZARD SEVERITY IS 0, YOU DO NOT NEED TO COMPLETE PART II OF THIS FORM. PROCEED TO PART III AND USE A RAC SCORE OF 5 TO DETERMINE YOUR APPROPRIATE ACTION.

PART II. Hazard Probability. The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance or explosive materials on a formerly used Department of Defense (DoD) site.

AREA, EXTENT, ACCESSIBILITY OF OEW HAZARD  
(Circle all that apply)

A. Location of OEW Hazards: VALUE

On the surface	<u>5</u>
Within tanks, pipes, vessels or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
Location (Select the single largest value)	<u>5</u>

What evidence do you have regarding location of OE? **One 105mm artillery round was found on Devil's Backbone about ¼ mile from a residence.**

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard  
(road, park, playground, building, etc.): VALUE

Less than 1250 feet	5
1250 feet to 0.5 miles	<u>4</u>
0.5 miles to 1.0 miles	3
1.0 mile to 2.0 miles	2
Over 2 miles	1
Distance (Select the single largest value)	<u>4</u>

What are the nearest inhabited structures/buildings? **One 105mm artillery round was found on Devil's Backbone about ¼ mile from a residence.**

C. Number of buildings within a 2-mile radius measured from the OE hazard area,  
not the installation boundary: VALUE

26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0
Number of Buildings (Select the single largest value)	<u>5</u>

Narrative. **There are more than 26 residences (plus outbuildings).**

D. Types of Buildings (within a 2-mile radius) VALUE

Educational, Child Care, Residential, Hospitals, Hotels, Commercial, Shopping Centers	5
Industrial, Warehouse, etc.	4
Agricultural, Forestry, etc.	3
Detention, Correctional	2
No Buildings	0
Types of Buildings (Select the largest single value)	<u>5</u>

Describe the types of buildings. **Residences and farm buildings are located around this location.**

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance:

BARRIER	VALUE
No barrier or security system	5
Barrier is incomplete (e.g. in disrepair or does not completely surround the site). Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	4
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security guard, but no barrier	2
Isolated site	1
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel) which continuously monitors and controls entry; or an artificial or natural barrier (e.g., a fence combined with a cliff), which completely surrounds the area; and a means to control entry, at all times, through the gates or other entrances to the facility (e.g., an attendant, television monitors, locked entrances, or controlled roadway access to the facility).	0
Accessibility (Select the single largest value)	<u>5</u>

Describe the site accessibility. **There is farm fence in some areas. No fence at all in some areas.**

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility.

	VALUE
Expected	5
None Anticipated	0
Site Dynamics (Select value)	<u>5</u>

Describe the site dynamics. **Properties continue to be subdivided and built on.**

TOTAL HAZARD PROBABILITY VALUE

(Sum of Largest Values for A through F--Maximum of 30)

29

Apply this value to Hazard Probability Table 2 to determine Hazard Probability Level.

TABLE 2  
HAZARD PROBABILITY\*

---

<u>Description</u>	<u>Level</u>	<u>Hazard Probability Value</u>
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASIONAL	C	15 to 20
REMOTE	D	8 to 14
IMPROBABLE	E	less than 8

\* Apply Hazard Probability Level to Table 3.

---

PART III. Risk Assessment. The risk assessment value for this site is determined using the following Table. Enter the results of the Hazard Probability and Hazard Severity values.

TABLE 3

Probability Level		FREQUENTA	PROBABLE B	OCCASIONAL C	REMOTE D	IMPROBABLE E
Severity Category:						
CATASTROPHIC	I	1	1	2	3	4
CRITICAL	II	1	2	3	4	5
MARGINAL	III	2	3	4	4	5
NEGLIGIBLE	IV	3	4	4	5	5

RISK ASSESSMENT CODE (RAC)

RAC 1	Expedite INPR, recommending further action by USAESCH – Immediately call USAESCH-OE-S--commercial (256) 895-1582/1598
RAC 2	High priority on completion of INPR - Recommend further action by USAESCH.
RAC 3	Complete INPR - Recommend further action by USAESCH
RAC 4	Complete INPR - Recommend further action by USAESCH
RAC 5	Usually indicates that No DoD Action Indicated (NDAI) is necessary. Submit NDAI and RAC to USAESCH.

PART IV. Narrative. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

**Camp Chaffee has been used for ordnance training ranging from small arms to Honest John rockets continuously since World War II. There is confirmed evidence of artillery rounds going outside the Camp Chaffee boundary into the Devil's Backbone Area. Evidence consists of an unexploded round found near a home on Devil's Backbone and the testimony of an EOD tech who cleaned up ordnance on Devil's Backbone outside the Camp Chaffee boundary.**

**Camp Chaffee  
Washburn**

**A-1-2**

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RISK ASSESSMENT PROCEDURES FOR  
 ORDNANCE AND EXPLOSIVES (OE) SITES

Site Name: **Camp Chaffee – Washburn** Rater's Name: Moore  
 Site Location: Ft. Smith, AR Phone Number: 314/331-8249  
 DERP Project # K06AR000400 Organization: CEMVS-ED-DC  
 Date Completed: 04 September 2002 Score: **1**

OE RISK ASSESSMENT:

This risk assessment procedure was developed in accordance with MIL-STD 882C and AR 385-10. The Risk Assessment Code (RAC) score will be used by the U.S. Army Engineering and Support Center, Huntsville (USAESCH), Ordnance and Explosives Team (USAESCH-OE) to prioritize the remedial action(s) at Formerly Used Defense Sites (FUDS). The risk assessment should be based upon best available information resulting from records searches, reports of Explosive Ordnance Disposal (EOD) Detachments actions, field observations, interviews, and measurements. This information is used to assess the risk involved based upon the potential OE hazards identified at the site. The risk assessment is composed of two factors, hazard severity and hazard probability. Personnel involved in visits to potential OE sites should view the USAESCH-OE videotape entitled "A Life Threatening Encounter: OEW."

PART I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of unexploded ordnance items.

TYPE OF ORDNANCE: (Circle all that apply)

A. Conventional Ordnance and Ammunition:	VALUE
Medium/Large Caliber (20mm and larger)	10
Bombs, Explosive	10
Grenades, Hand or Rifle, Explosive	10
Landmine, Explosive	10
Rockets, Guided Missile, Explosive	10
Detonators, Blasting Caps, Fuzes, Boosters, Bursters	6
Bombs, Practice (w/spotting charges)	6
Grenades, Practice (w/spotting charges)	4
Landmine, Practice (w/spotting charges)	4
Small Arms, Complete Round (.22 cal - .50 cal)	1
Small Arms, Expended	0
Practice ordnance (w/o spotting charges)	0
Conventional Ordnance and Ammunition (Largest single value)	<u>10</u>

What evidence do you have regarding conventional unexploded ordnance? **Two unexploded 105mm artillery rounds were found near a residence.**

B. Pyrotechnics (for munitions not described above):	VALUE
Munitions (Containers) containing White Phosphorus (WP) or other Pyrophoric Material (i.e., Spontaneously Flammable)	10
Munitions containing a flame or incendiary material (i.e., Napalm, Triethylaluminum Metal Incendiaries)	6
Flares, Signals, Simulators, Screening Smokes (other than WP)	4
Pyrotechnics (Select the largest single value)	<u>0</u>
What evidence do you have regarding pyrotechnics? <b>None</b>	

C. Bulk High Explosives (Not an integral part of conventional ordnance; uncontainerized):	VALUE
Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Demolition Charges	10
Secondary Explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Military Dynamite	6
Less Sensitive Explosives (Ammonium Nitrate, Explosive D, etc.)	3
High Explosives (Select the largest single value)	<u>0</u>
What evidence do you have regarding bulk explosives? <b>None</b>	

D. Bulk Propellants (Not an integral part of rockets, guided missiles, or other conventional ordnance; uncontainerized):	VALUE
Solid or Liquid Propellants	6
Propellants	<u>0</u>
What evidence do you have regarding bulk propellants? <b>None</b>	

E.	Chemical Warfare Materiel (CWM) and Radiological Weapons:	VALUE
	Toxic Chemical Agents (Choking, Nerve, Blood, Blister)	25
	War Gas Identification Sets	20
	Radiological	15
	Riot Control Agents (Vomiting, Tear)	5
	Chemical and Radiological (Select the largest single value)	<u>0</u>
	What evidence do you have regarding chemical/radiological OEW? <b>None</b>	

TOTAL HAZARD SEVERITY VALUE

(Sum of the Values for A through E--Maximum of 61) 10  
 Apply this value to Table 1 to determine Hazard Severity Category.

TABLE 1

HAZARD SEVERITY\*

<u>DESCRIPTION</u>	<u>CATEGORY</u>	<u>HAZARD SEVERITY VALUE</u>
CATASTROPHIC	I	21 and/or greater
CRITICAL	II	10 to 20
MARGINAL	III	5 to 9
NEGLIGIBLE	IV	1 to 4
**NONE V	0	

\* APPLY HAZARD SEVERITY CATEGORY TO TABLE 3.

\*\* IF HAZARD SEVERITY IS 0, YOU DO NOT NEED TO COMPLETE PART II OF THIS FORM. PROCEED TO PART III AND USE A RAC SCORE OF 5 TO DETERMINE YOUR APPROPRIATE ACTION.

PART II. Hazard Probability. The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance or explosive materials on a formerly used Department of Defense (DoD) site.

AREA, EXTENT, ACCESSIBILITY OF OEW HAZARD  
(Circle all that apply)

A. Location of OEW Hazards: VALUE

On the surface	<u>5</u>
Within tanks, pipes, vessels or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
Location (Select the single largest value)	<u>5</u>

What evidence do you have regarding location of OE? **Two 105mm artillery rounds were found partially buried near a residence.**

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard (road, park, playground, building, etc.): VALUE

Less than 1250 feet	<u>5</u>
1250 feet to 0.5 miles	4
0.5 miles to 1.0 miles	3
1.0 mile to 2.0 miles	2
Over 2 miles	1
Distance (Select the single largest value)	<u>5</u>

What are the nearest inhabited structures/buildings? **Two 105mm artillery rounds were found partially buried near a residence.**

C. Number of buildings within a 2-mile radius measured from the OE hazard area, not the installation boundary: VALUE

26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0
Number of Buildings (Select the single largest value)	<u>5</u>

Narrative. **There are more than 26 residences (plus outbuildings).**

D. Types of Buildings (within a 2-mile radius) VALUE

Educational, Child Care, Residential, Hospitals, Hotels, Commercial, Shopping Centers	5
Industrial, Warehouse, etc.	4
Agricultural, Forestry, etc.	3
Detention, Correctional	2
No Buildings	0
Types of Buildings (Select the largest single value)	<u>5</u>

Describe the types of buildings. **Residences and farm buildings are located around this location.**

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance:

BARRIER	VALUE
No barrier or security system	5
Barrier is incomplete (e.g. in disrepair or does not completely surround the site). Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	4
A barrier (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	3
Security guard, but no barrier	2
Isolated site	1
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel) which continuously monitors and controls entry; or an artificial or natural barrier (e.g., a fence combined with a cliff), which completely surrounds the area; and a means to control entry, at all times, through the gates or other entrances to the facility (e.g., an attendant, television monitors, locked entrances, or controlled roadway access to the facility).	0
Accessibility (Select the single largest value)	<u>5</u>

Describe the site accessibility. **There is farm fence in some areas. No fence at all in some areas.**

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility.

	VALUE
Expected	5
None Anticipated	0
Site Dynamics (Select value)	<u>5</u>

Describe the site dynamics. **Properties continue to be subdivided and built on.**

TOTAL HAZARD PROBABILITY VALUE

(Sum of Largest Values for A through F--Maximum of 30)

30

Apply this value to Hazard Probability Table 2 to determine Hazard Probability Level.

TABLE 2  
HAZARD PROBABILITY\*

---

<u>Description</u>	<u>Level</u>	<u>Hazard Probability Value</u>
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
OCCASIONAL	C	15 to 20
REMOTE	D	8 to 14
IMPROBABLE	E	less than 8

\* Apply Hazard Probability Level to Table 3.

---

PART III. Risk Assessment. The risk assessment value for this site is determined using the following Table. Enter the results of the Hazard Probability and Hazard Severity values.

TABLE 3

Probability Level		FREQUENTA	PROBABLE B	OCCASIONAL C	REMOTE D	IMPROBABLE E
Severity Category:						
CATASTROPHIC I		1	1	2	3	4
CRITICAL II		1	2	3	4	5
MARGINAL III		2	3	4	4	5
NEGLIGIBLE IV		3	4	4	5	5

RISK ASSESSMENT CODE (RAC)

RAC 1	Expedite INPR, recommending further action by USAESCH – Immediately call USAESCH-OE-S--commercial (256) 895-1582/1598
RAC 2	High priority on completion of INPR - Recommend further action by USAESCH.
RAC 3	Complete INPR - Recommend further action by USAESCH
RAC 4	Complete INPR - Recommend further action by USAESCH
RAC 5	Usually indicates that No DoD Action Indicated (NDAI) is necessary. Submit NDAI and RAC to USAESCH.

PART IV. Narrative. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

**Camp Chaffee has been used for ordnance training ranging from small arms to Honest John rockets continuously since World War II. There is confirmed evidence of artillery rounds going outside the Camp Chaffee boundary into the Washburn Area. Evidence consists of two unexploded rounds found near a home.**

**Camp Chaffee  
East Area**

**A-1-3**

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RISK ASSESSMENT PROCEDURES FOR  
ORDNANCE AND EXPLOSIVES (OE) SITES

Site Name: **Camp Chaffee – East Area** Rater's Name: Moore  
 Site Location: Ft. Smith, AR Phone Number: 314/331-8249  
 DERP Project # K06AR000400 Organization: CEMVS-ED-DC  
 Date Completed: 04 September 2002 Score: **1**

OE RISK ASSESSMENT:

This risk assessment procedure was developed in accordance with MIL-STD 882C and AR 385-10. The Risk Assessment Code (RAC) score will be used by the U.S. Army Engineering and Support Center, Huntsville (USAESCH), Ordnance and Explosives Team (USAESCH-OE) to prioritize the remedial action(s) at Formerly Used Defense Sites (FUDS). The risk assessment should be based upon best available information resulting from records searches, reports of Explosive Ordnance Disposal (EOD) Detachments actions, field observations, interviews, and measurements. This information is used to assess the risk involved based upon the potential OE hazards identified at the site. The risk assessment is composed of two factors, hazard severity and hazard probability. Personnel involved in visits to potential OE sites should view the USAESCH-OE videotape entitled "A Life Threatening Encounter: OEW."

PART I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible event resulting from personnel exposure to various types and quantities of unexploded ordnance items.

TYPE OF ORDNANCE: (Circle all that apply)

A. Conventional Ordnance and Ammunition:	VALUE
Medium/Large Caliber (20mm and larger)	10
Bombs, Explosive	10
Grenades, Hand or Rifle, Explosive	10
Landmine, Explosive	10
Rockets, Guided Missile, Explosive	10
Detonators, Blasting Caps, Fuzes, Boosters, Bursters	6
Bombs, Practice (w/spotting charges)	6
Grenades, Practice (w/spotting charges)	4
Landmine, Practice (w/spotting charges)	4
Small Arms, Complete Round (.22 cal - .50 cal)	1
Small Arms, Expended	0
Practice ordnance (w/o spotting charges)	0
Conventional Ordnance and Ammunition (Largest single value)	<u>10</u>

What evidence do you have regarding conventional unexploded ordnance? One unexploded 105mm artillery round found near a home and numerous craters in various areas near homes.

B. Pyrotechnics (for munitions not described above):	VALUE
Munitions (Containers) containing White Phosphorus (WP) or other Pyrophoric Material (i.e., Spontaneously Flammable)	10
Munitions containing a flame or incendiary material (i.e., Napalm, Triethylaluminum Metal Incendiaries)	6
Flares, Signals, Simulators, Screening Smokes (other than WP)	4
Pyrotechnics (Select the largest single value)	<u>0</u>
What evidence do you have regarding pyrotechnics?	<b>None</b>

C. Bulk High Explosives (Not an integral part of conventional ordnance; uncontainerized):	VALUE
Primary or initiating explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Demolition Charges	10
Secondary Explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Military Dynamite	6
Less Sensitive Explosives (Ammonium Nitrate, Explosive D, etc.)	3
High Explosives (Select the largest single value)	<u>0</u>
What evidence do you have regarding bulk explosives?	<b>None</b>

D. Bulk Propellants (Not an integral part of rockets, guided missiles, or other conventional ordnance; uncontainerized):	VALUE
Solid or Liquid Propellants	6
Propellants	<u>0</u>
What evidence do you have regarding bulk propellants?	<b>None</b>

E.	Chemical Warfare Materiel (CWM) and Radiological Weapons:	VALUE
	Toxic Chemical Agents (Choking, Nerve, Blood, Blister)	25
	War Gas Identification Sets	20
	Radiological	15
	Riot Control Agents (Vomiting, Tear)	5
	Chemical and Radiological (Select the largest single value)	<u>0</u>
	What evidence do you have regarding chemical/radiological OEW? <b>None</b>	

TOTAL HAZARD SEVERITY VALUE

(Sum of the Values for A through E--Maximum of 61) 10  
 Apply this value to Table 1 to determine Hazard Severity Category.

TABLE 1

HAZARD SEVERITY\*

<u>DESCRIPTION</u>	<u>CATEGORY</u>	<u>HAZARD SEVERITY VALUE</u>
CATASTROPHIC	I	21 and/or greater
CRITICAL	II	10 to 20
MARGINAL	III	5 to 9
NEGLIGIBLE	IV	1 to 4
**NONE V	0	

\* APPLY HAZARD SEVERITY CATEGORY TO TABLE 3.

\*\* IF HAZARD SEVERITY IS 0, YOU DO NOT NEED TO COMPLETE PART II OF THIS FORM. PROCEED TO PART III AND USE A RAC SCORE OF 5 TO DETERMINE YOUR APPROPRIATE ACTION.

PART II. Hazard Probability. The probability that a hazard has been, or will be, created due to the presence and other rated factors of unexploded ordnance or explosive materials on a formerly used Department of Defense (DoD) site.

AREA, EXTENT, ACCESSIBILITY OF OEW HAZARD  
(Circle all that apply)

A. Location of OEW Hazards: VALUE

On the surface	<u>5</u>
Within tanks, pipes, vessels or other confined areas	4
Inside walls, ceilings, or other building/structure	3
Subsurface	2
Location (Select the single largest value)	<u>5</u>

What evidence do you have regarding location of OE? **A 105mm artillery round was found partially buried behind a residence.**

B. Distance to nearest inhabited location/structure likely to be at risk from OE hazard (road, park, playground, building, etc.): VALUE

Less than 1250 feet	<u>5</u>
1250 feet to 0.5 miles	4
0.5 miles to 1.0 miles	3
1.0 mile to 2.0 miles	2
Over 2 miles	1
Distance (Select the single largest value)	<u>5</u>

What are the nearest inhabited structures/buildings? **A 105mm artillery round was found partially buried behind a residence.**

C. Number of buildings within a 2-mile radius measured from the OE hazard area, not the installation boundary: VALUE

26 and over	5
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0
Number of Buildings (Select the single largest value)	<u>5</u>

Narrative. **There are more than 26 residences (plus outbuildings).**

D. Types of Buildings (within a 2-mile radius) VALUE

Educational, Child Care, Residential, Hospitals, Hotels, Commercial, Shopping Centers	5
Industrial, Warehouse, etc.	4
Agricultural, Forestry, etc.	3
Detention, Correctional	2
No Buildings	0
Types of Buildings (Select the largest single value)	<u>5</u>

Describe the types of buildings. **Residences and farm buildings are located around this location.**

E. Accessibility to site refers to access by humans to ordnance and explosives. Use the following guidance:

BARRIER	VALUE
No barrier or security system	5
Barrier is incomplete (e.g. in disrepair or does not completely surround the site). Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	4
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Accessibility (Select the single largest value)	<u>5</u>

Describe the site accessibility. **There is farm fence in some areas. No fence at all in some areas.**

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion on beaches or streams, increasing land development that could reduce distances from the site to inhabited areas or otherwise increase accessibility.

	VALUE
Expected	5
None Anticipated	0
Site Dynamics (Select value)	<u>5</u>

Describe the site dynamics. **Properties continue to be subdivided and built on.**

TOTAL HAZARD PROBABILITY VALUE

(Sum of Largest Values for A through F--Maximum of 30)

30

Apply this value to Hazard Probability Table 2 to determine Hazard Probability Level.

TABLE 2  
HAZARD PROBABILITY\*

---

<u>Description</u>	<u>Level</u>	<u>Hazard Probability Value</u>
FREQUENT	A	27 or greater
PROBABLE	B	21 to 26
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REMOTE	D	8 to 14
IMPROBABLE	E	less than 8

\* Apply Hazard Probability Level to Table 3.

---

PART III. Risk Assessment. The risk assessment value for this site is determined using the following Table. Enter the results of the Hazard Probability and Hazard Severity values.

TABLE 3

Probability Level		FREQUENTA	PROBABLE B	OCCASIONAL C	REMOTE D	IMPROBABLE E
Severity Category:						
CATASTROPHIC I		1	1	2	3	4
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RISK ASSESSMENT CODE (RAC)

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RAC 2	High priority on completion of INPR - Recommend further action by USAESCH.
RAC 3	Complete INPR - Recommend further action by USAESCH
RAC 4	Complete INPR - Recommend further action by USAESCH
RAC 5	Usually indicates that No DoD Action Indicated (NDAI) is necessary. Submit NDAI and RAC to USAESCH.

PART IV. Narrative. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

**Camp Chaffee has been used for ordnance training ranging from small arms to Honest John rockets continuously since World War II. There is confirmed evidence of artillery rounds going outside the Camp Chaffee boundary into the East Area. Evidence consists of an unexploded round found near a home and numerous craters found at various locations.**

## **APPENDIX A-2**

### **REFERENCES**

**(Not Used)**

**(See Original ASR Report and BRAC Report)**

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**APPENDIX B**  
**GLOSSARY AND ACRONYMS**

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## **APPENDIX B**

### **GLOSSARY AND ACRONYMS**

AAF*	Army Air Field
AA	Anti-Aircraft
ACGIH	American Conference of Governmental Industrial Hygienist
AEC	Army Environmental Center
AFB	Air Force Base
AP	Armor Piercing
APDS	Armor Piercing Discarding Sabot
APERS	Anti-Personnel
AP-T	Armor Piercing-Tracer
ASR	Archive Search Report
AT	Anti-Tank
BD	Base Detonating
BD/DR	Building Demolition/Debris Removal
BLM	Bureau of Land Management
BRAC	Base Realignment and Closure
CADD	Computer-Aided Drafting and Design
cal	Caliber
CBDCOM	Chemical and Biological Defense Command
CE	Corps of Engineers
CEHNC	Corps of Engineers, Huntsville Engineering and Support Center
CEMVS	Corps of Engineers, Mississippi Valley-St. Louis District
CEMVK	Corps of Engineers, Mississippi Valley-Vicksburg District
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
COE	Chief of Engineers
ctg	Cartridge
CWM	Chemical Warfare Material
CWS*	Chemical Warfare Service
CX	Center of Expertise
DA	Department of the Army
DERP	Defense Environmental Restoration Program
DoD	Department of Defense
DOI	Department of Interior
EE/CA	Engineering Evaluation/Cost Analysis
EIS	Environmental Impact Statement
EM	Engineer Manual
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
FM	Field Manual

FS	Feasibility Study
FUDS	Formerly Used Defense Sites
GIS	Geographic Information System
GPS	Global Positioning Satellite
GSA	General Services Administration
HE	High Explosive
HEAT	High Explosive Anti-Tank
HEI	High Explosive Incendiary
HEP	High Explosive Plastic
HTRW	Hazardous Toxic and Radioactive Waste
HTW	Hazardous and Toxic Waste
IAS	Initial Assessment Study
IATCB	Interdepartmental Air Traffic Control Board
INPR	Inventory Project Report
IRP	Installation Restoration Program
LD	Lyme Disease
MCX	Mandatory Center of Expertise
MT	Mechanical Time
MTSQ	Mechanical Time Super Quick
NARA	National Archives and Records Administration
NAVSEA	Naval Sea Systems Command
NAS*	Naval Air Station
NCP	National Contingency Plan
n.d.	No Date
NEW	Net Explosive Weight
NGVD	National Geographic Vertical Datum
NIMA	National Imagery and Mapping Agency
NMAS	National Map Accuracy Standards
NPL	National Priorities List
NOAA	National Oceanic and Atmospheric Administration
NOFA	No Further Action
NPRC	National Personnel Records Center
NRC	National Records Center
NWS	National Weather Service
OCE	Office Chief of Engineers
OE	Ordnance and Explosives
OP	Ordnance Pamphlet
OSHA	Occupational Safety and Health Administration
PA	Preliminary Assessment
PD	Point Detonating
PE	Professional Engineer
PIBD	Point Initiating, Base Detonating
PM	Project Manager
PPE	Personal Protective Equipment

QASAS	Quality Assurance Specialist, Ammunition Surveillance
RAC	Risk Assessment Code
RG	Record Group
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
SARA	Superfund Amendments and Reauthorization Act
SOP	Standing Operating Procedures
SPB*	Surplus Property Board
SSHO	Site Safety and Health Officer
SSHPP	Site Safety and Health Plan
TCRA	Time Critical Removal Action
TEU	United States Army Technical Escort Unit
TM	Technical Manual
TNT	Trinitrotoluene
TP	Target Practice
USACE	U.S. Army Corps of Engineers
USADACS	U.S. Army Defense Ammunition Center and School
USAFHRA	U.S. Air Force Historical Research Agency
USATCES	U.S. Army Technical Center for Explosive Safety
USATHMA	U.S. Army Toxic and Hazardous Materials Agency
USC	United States Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UXO	Unexploded Ordnance
WAA*	War Assets Administration
WNRC	Washington National Records Center

\* designates an historic acronym

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**APPENDIX C**  
**TEXT/MANUALS**

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## **APPENDIX C**

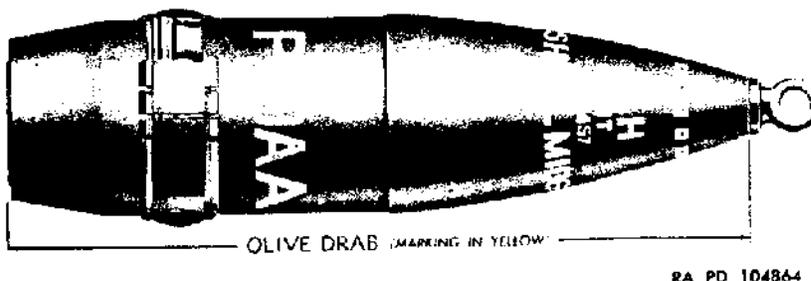
Positive identification for munitions that have been found, or detonated, on property outside the Ft. Chaffee boundaries were not positively identified. The following munitions are a selection of typical projectiles fired for training on artillery ranges.

### **TEXT/MANUALS**

- C-1 PROJECTILE, 8 – INCH, HE, M106
- C-2 CARTRIDGE, 105mm, HE, M1
- C-3 CARTRIDGE, 105mm, SMOKE, HC, COLORED, M84 SERIES
- C-4 CARTRIDGE, 105mm, SMOKE, WP, M60A1, M60A2
- C-5 CARTRIDGE, 105mm, TP-T, M67
- C-6 CARTRIDGE, 105mm, ILLUMINATING, M314A3
- C-7 PROJECTILE, 155mm, ILLUMINATING, M485 SERIES
- C-8 PROJECTILE, 155mm, PRACTICE, M804 AND M804A1
- C-9 PROJECTILE, 155mm, SMOKE, WP, M104
- C-10 PROJECTILE, 155mm, AP, 112
- C-11 PROJECTILE, 155mm, HE, M107
- C-12 PROJECTILE, 155mm, HE, M102, MK1, MKIA1
- C-13 PROJECTILE, 155mm, ILLUMINATING, M118 SERIES
- C-14 PROJECTILE, 155mm, SHRAPNEL, MK I
- C-15 PROJECTILE, 155mm, SMOKE, WP, M110 AND M110E1

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## PROJECTILE, 8-INCH, HE, M106



Shell, HE, M106, for 8-inch Howitzer

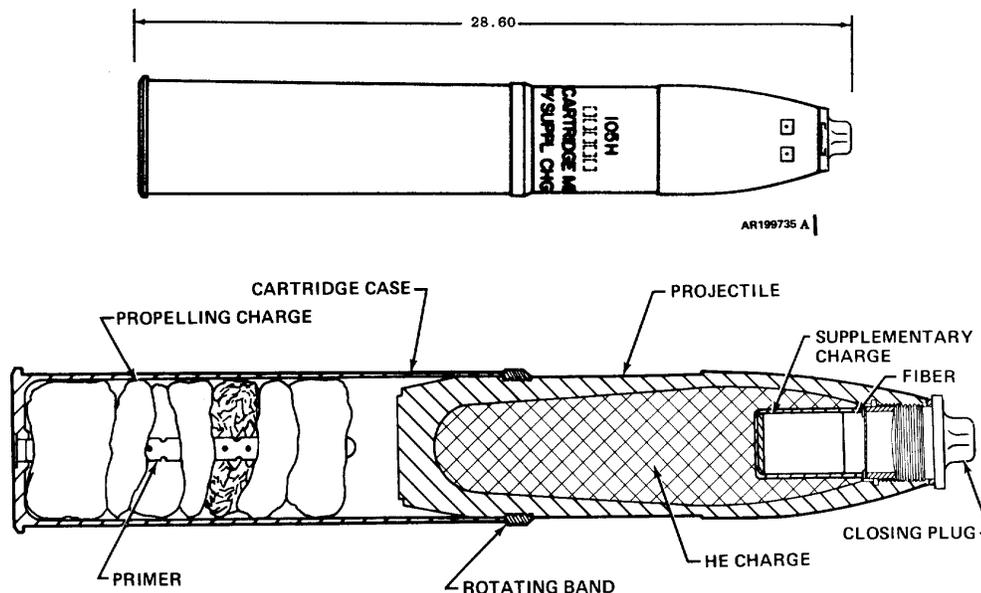
*Shell, HE, M106.* This shell has a normal cavity in which an aluminum fuze well cup is assembled. The rotating band, made of copper or gilding metal, is located 6.06 inches from the base end and has two cannelures or grooves. The shell is adapted to receive the following fuzes: CP (concrete piercing) M78 or M78A1; MTSQ M500; M51A5 or PD M51A4; or mechanical time M67A3. The projectile is fitted with a base cover which may consist either of a steel cup assembly, secured to the base by means of a lead caulking strip, or of a steel plate which is welded to the base. This base cover prevents the hot gases from the propelling charge from reaching the bursting charge of the projectile through possible defects or flaws in the base. The bursting charge consists of 36.75 pounds of TNT. The projectile is painted lusterless olive drab and is stenciled in yellow with the designation of weapon (8H), the designation of filler (TNT), and the complete round designation (Shell M106).

*Shell, HE, M106, w/Supplemental Charge.* This shell is similar to the shell M106 described, except that it has a deep fuze cavity so that it can be used with VT fuzes. The shell, as issued with a supplementary bursting charge is adapted for use with standard, mechanical time superquick, time and superquick, impact, or concrete-piercing fuzes.

*Propelling Charge.* Two types of charge are provided, the green bag M1 and white bag M2. A flash reducer M3 (T3) is provided for optional use with the M2 charge.

<b>Weight of Projectile as fired</b> .....	240.37 pounds
<b>Length of Projectile</b> .....	40.95 inches
<b>Width of rotating band</b> .....	3.33 inches
<b>Filler and Weight</b> .....	TNT (36.75 pounds)
<b>Fuzes</b> .....	MTSQ, M500; PD, M51A5; MT, M67A3; CP, M78, M78A1; VT, M96
<b>Propelling charges</b> .....	M1, M2,
<b>Color</b> .....	Olive drab w / yellow markings
<b>Reference:</b> TM 9-1901, <i>Artillery Ammunition</i> , September 1950	

## CARTRIDGE, 105mm, HE, M1

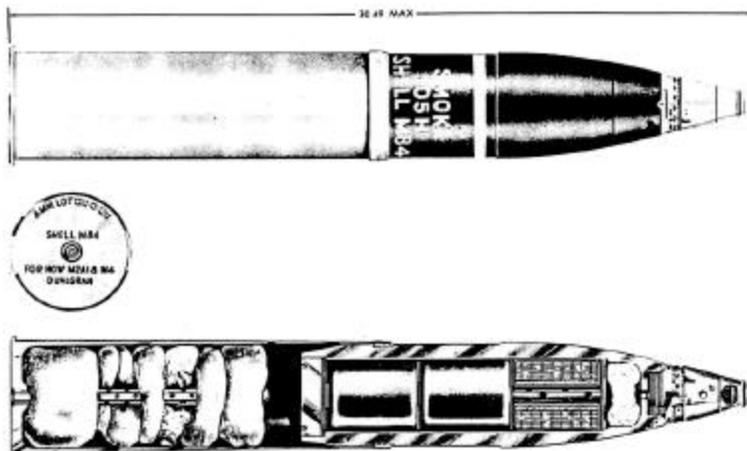


*Use.* The projectile of this cartridge contains high explosive and is used for fragmentation, blast, and mining in support of ground troops and armored columns.

*Description.* The projectile consists of a hollow steel forging with a boattail base, a streamlined ogive, and gliding metal rotating band. A base cover is welded to the base of the projectile for added protection against the entrance of hot gases from the propelling charge during firing. The high explosive filler within the projectile may be either cast TNT or Composition B. A fuze cavity is either drilled or formed in the filler at the nose end of the projectile. This cavity may be either shallow or deep. A cavity liner, to preclude dusting of HE during transportation and handling, is seated in the cavity and expanded into the lower projectile fuze threads. A supplementary charge is placed in the fuze cavity of projectiles having deep cavities. Projectiles with shallow cavities or deep cavities containing a supplementary charge use only short intrusion fuzes, PD, or MT. Those with deep cavities will accept the long intrusion proximity fuse after removing the supplementary charge. The cartridge case contains a percussion primer assembly and seven individually bagged and numbered propelling charge increments. The percussion primer assembly consists of a percussion ignition element and a perforated flash tube containing black powder. The seven numbered increment bags are tied together. These are assembled into the cartridge case, around the primer flash tube.

<b>Weight</b> .....	39.92 pounds
<b>Length with Closing Plug</b> .....	28.60 inches
<b>Filler and Weight</b>	
<b>Normal Cavity</b> .....	Comp B, 5.08 pounds
	TNT, 4.80 pounds
<b>Deep Cavity</b> .....	Comp B, 4.60 pounds
	TNT, 4.25 pounds
<b>Propellant Charge (max weight)</b> .....	2.83 pounds
<b>Color</b> .....	Olive drab w / yellow markings
<b>Reference:</b> TM 43-0001-28, <i>Army Ammunition Data Sheets, Artillery Ammunition</i> , April 1977	

## CARTRIDGE, 105mm, SMOKE, HC & COLORED, M84 SERIES



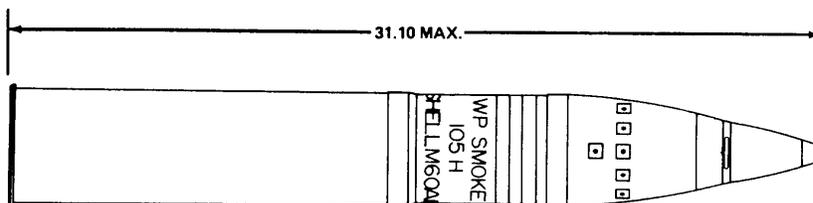
*Description.* The projectile body consists of a hollow steel forging with a boattail base, a streamlined ogive gilding metal rotating band, and base plug. A black powder expelling charge is assembled into the projectile at the nose end. Next, a steel baffle (pusher) plate, with a central hole, is assembled behind the expelling charge followed by three smoke canisters, alternating spacers, fillers, and the base plug. The spacers are assembled between canisters, as well as at the base, to insure a tight canister pack. An MTSQ or MT fuze is assembled to the nose of the projectile. The canisters are metal cylinders with a central igniter core. Around the igniter core is a first-fire mix which serves to initiate the smoke mix. The smoke mix surrounds the first-fire mix and when initiated, generates a white (HC) or, in the cases of the M84 and M84B1, HC or other colored smoke. The cartridge case contains a percussion primer assembly and even individually bagged and numbered propelling charge increments. The base of the cartridge case is chilled and the primer assembly is press fitted in the base. The percussion primer assembly consists of a percussion ignition element and a perforated flash tube containing black powder. The seven numbered increment bags are tied together, in numerical order, with acrylic cord. These are assembled into the cartridge case, around the primer flash tube, with Increment I at the base of the cartridge case and Increment 7 toward the mouth of the cartridge case.

*Functioning.* The projectile functions above ground at a predetermined height based upon time of flight. The fuze initiates the black powder in the expelling charge which flashes through the center hole of the baffle plate initiating the first-fire mix in the canisters. The burning black powder generates gas pressure against the baffle plate which, through the canisters, causes the base plate and canisters to leave the projectile. The first-fire mix initiates the smoke charge. The canisters burn for 40 to 90 seconds.

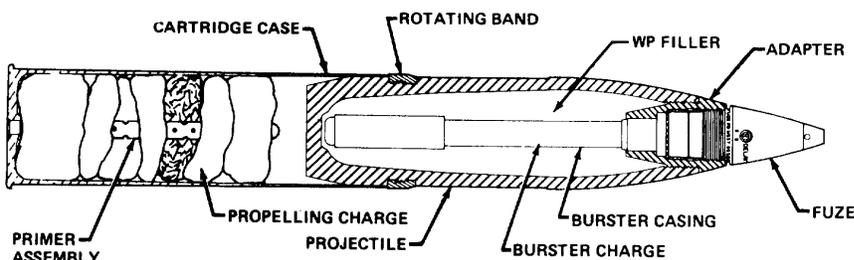
<b>Length</b> .....	30.49 inches
<b>Diameter</b> .....	105mm (4.13 inches)
<b>Weight</b> .....	41.96 pounds
<b>Filler</b> .....	12.3 pounds
<b>Expelling charge</b> .....	0.14 pounds Black Powder
<b>Propelling Charge</b> .....	M67, 2.83 pounds
<b>Fuze</b> .....	MTSQ - M501, M501A1, M577, M548; MT - M565; ET - M762

**Reference:** TM 43-0001-28, *Army Ammunition Data Sheets for Artillery Ammunition*, April 1994

## CARTRIDGE, 105mm, SMOKE, WP, M60, M60A1, M60A2



AR199721



AR199720

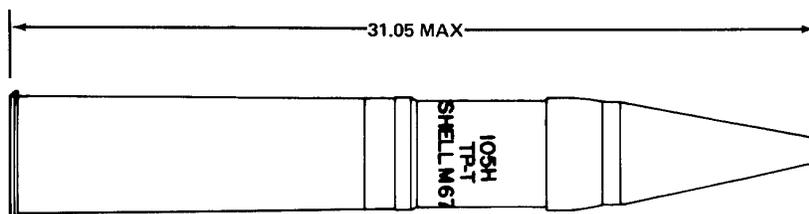
*Use.* The projectile of this cartridge contains white phosphorous (WP which is dispersed over the target area for screening purposes. The WP also has a limited incendiary effect.

*Description.* The projectile consists of a hollow steel forging with a boattail base, a streamlined ogive, and gliding metal rotating band. The projectile cavity is filled with cast White Phosphorous (WP). A steel nose adapter, having a female fuze thread, with a press fitted burster casing, is threaded into the nose of the projectile providing a seal for the filler. A burster charge is placed inside the burster casing and a fuze is threaded into the adapter. The cartridge case contains a percussion primer assembly and seven individually bagged and numbered propelling charge increments. The base of the cartridge case is drilled and the primer assembly pressed into the base. The percussion primer assembly consists of a percussion ignition element and a perforated flash tube containing black powder. The seven numbered increment bags are tied together. These are assembled into the cartridge case around the primer.

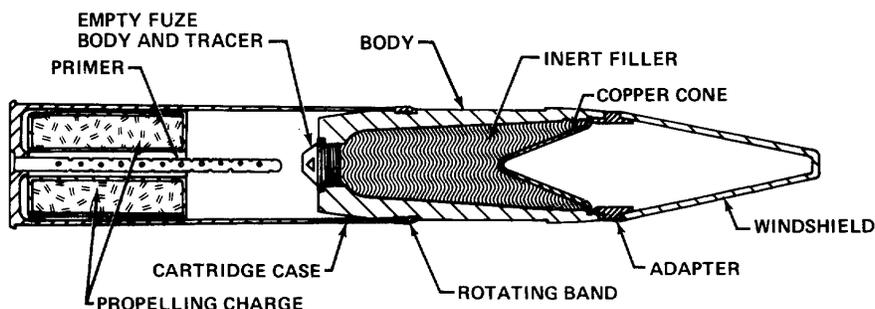
<b>Weight</b> .....	42.92 pound
<b>Length</b> .....	31.10 inches
<b>Filler</b> .....	White Phosphorous
<b>Filler Weight</b> .....	3.86 pounds
<b>Propellant (max weight)</b> .....	2.83 pounds
<b>Fuze</b> .....	PD, M557; MTSQ, M564
<b>Color</b>	
<b>Old manufacture</b> .....	gray w / yellow markings
<b>New manufacture</b> .....	Light green w/ yellow bands with light red markings

**Reference:** TM 43-0001-28, *Army Ammunition Data Sheets, Artillery Ammunition*, April 1977

## CARTRIDGE, 105mm, TP-T, M67



AR199715



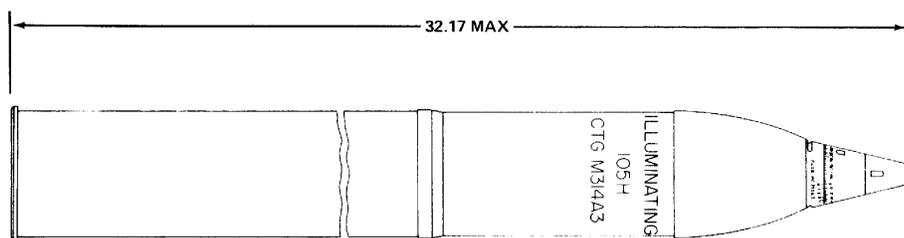
AR199714

*Use.* This cartridge is used for training in marksmanship.

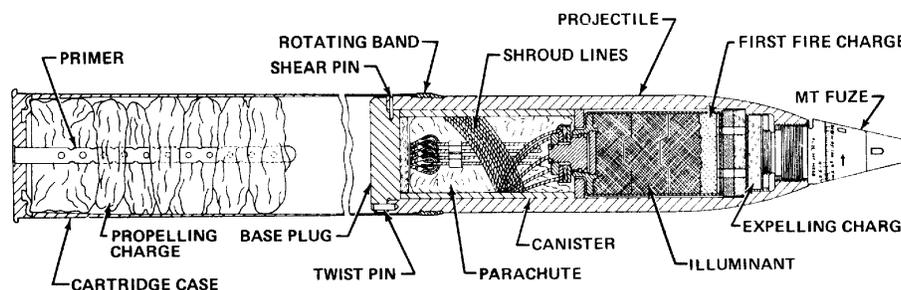
*Description.* The projectile consists of a boattailed steel body fitted with a steel windshield and gliding metal rotating band. The windshield is a hollow steel cone fitted to the front of a steel adapter. The adapter is threaded into the front end of the projectile, and retains a copper conical liner in the projectile cavity. The projectile cavity contains an inert filler. An empty fuze body with a live tracer is threaded into the base of the projectile. The complete projectile assembly is a free fit in the cartridge case. The cartridge case contains a percussion primer assembly and a single propelling charge increment. The base of the cartridge case is drilled and the primer assembly is pressed into the base. The percussion primer assembly consists of a percussion ignition element and a perforated flash tube containing black powder. The single increment bag is assembled into the cartridge case around the primer assembly..

**Weight**.....37.06 pounds  
**Length**.....31.05 inches  
**Filler**.....Inert  
**Propellant** .....1.54 pounds  
**Color**.....Blue or Black w / white markings  
**Reference:** TM 43-0001-28, *Army Ammunition Data Sheets, Artillery Ammunition*, April 1977

## CARTRIDGE, 105mm, ILLUMINATING, M314A3



AR199731



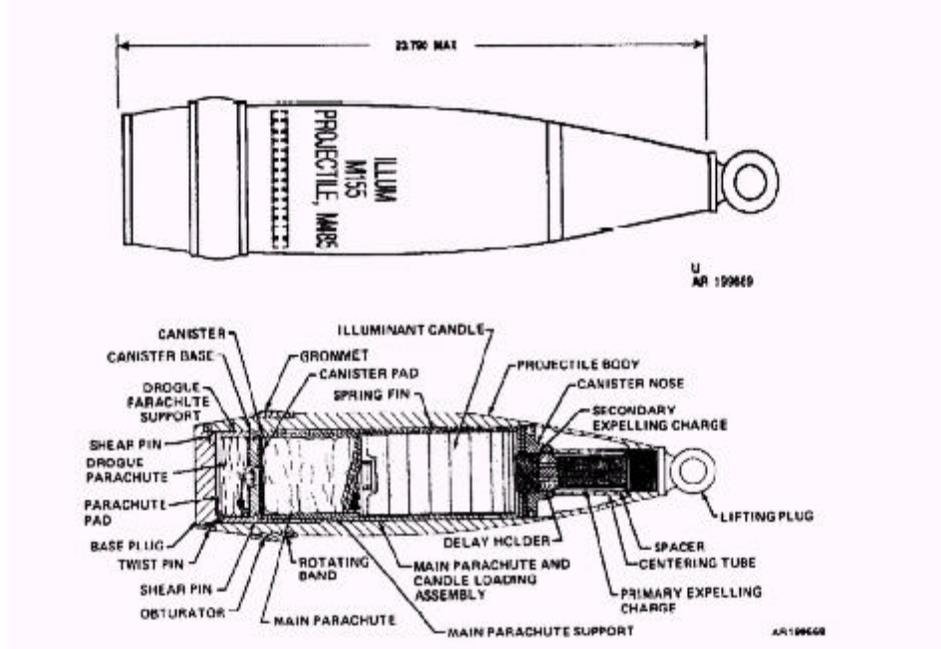
*Use.* This cartridge is intended for signaling or for illuminating a designated area.

*Description.* The projectile is a hollow steel forging with a streamlined ogive, a gliding metal rotating band, and a pinned base plug. The projectile is assembled with an MT fuze screwed into the nose. The projectile cavity contains and expelling charge, illuminating canister, and a parachute assembly. The expelling charge consists of 0.18 pounds of black powder contained in a sealed plastic holder. The illuminating canister body contains the illuminant and 0.15 pounds of first fire composition. The illuminating canister body is fitted with anti-rotational brakes. The parachute assembly is attached to the illuminating canister body. The base plug is inserted into the opening at the base of the projectile and held in place by three shear pins and three twist pins. The complete projectile assembly is free fitted to a cartridge case. The cartridge case contains a percussion primer assembly and seven individually bagged and numbered propelling charge increments. The base of the cartridge case is drilled and the primer assembly is pressed into the base. The percussion primer assembly consists of a percussion ignition element and a perforated flash tube containing black powder. The seven numbered increment bags are tied together and assembled into the cartridge case, around the primer flash tube.

<b>Weight</b> .....	46.43 pounds
<b>Length</b> .....	32.17 inches
<b>Filler</b> .....	Illuminating, 1.97 pounds
<b>Expelling Charge</b> .....	Black powder, 0.18 pounds
<b>Fuze</b> .....	MT M565 or M548
<b>Propellant</b> .....	4.7 to 5.9 pounds
<b>Color</b> .....	White w / black markings

**Reference:** TM 43-0001-28, *Army Ammunition Data Sheets, Artillery Ammunition*, April 1977

## PROJECTILE, 155MM, ILLUMINATING, M485 SERIES



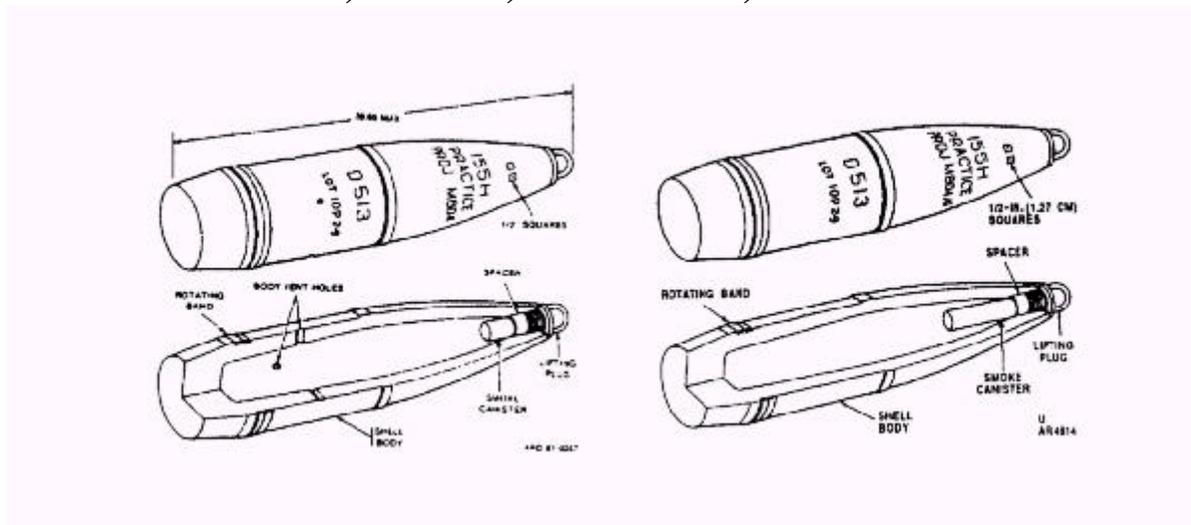
*Use:* This projectile is fired from 155mm howitzers and is used to illuminate the battlefield at night or during other conditions of reduced visibility.

*Description:* The projectile is a hollow steel shell containing an illuminate canister, a canister expelling charge in the nose, and a drogue parachute in the base. The illuminate canister contains the main parachute and lines, the illuminant candle assembly, a secondary expelling charge and a delay element holder. The outer shell of the canister is fitted with four longitudinal fins. The fins extend under spin forces when the canister is ejected from the projectile. The base of the projectile is closed with a press-fitted steel plug retained by shear and twist pins.

<b>Weight of Projectile w/o Fuze</b> .....	92 pounds
<b>Length of Projectile w/o lifting lug</b> .....	23.79 inches
<b>Filler and Weight</b> .....	Illuminating Compound, 94 oz
<b>Fuzes</b> .....	MT, M565; MTSQ, M577; ET M762
<b>Propelling charges</b> .....	M3, M4, M119
<b>Color</b> .....	Olive Drab w/white marking and white band

**Reference:** TM 43-0001-28, Army Ammunition Data Sheets for Artillery Ammunition, April 1994

## PROJECTILE, 155MM, PRACTICE, M804 AND M804A1



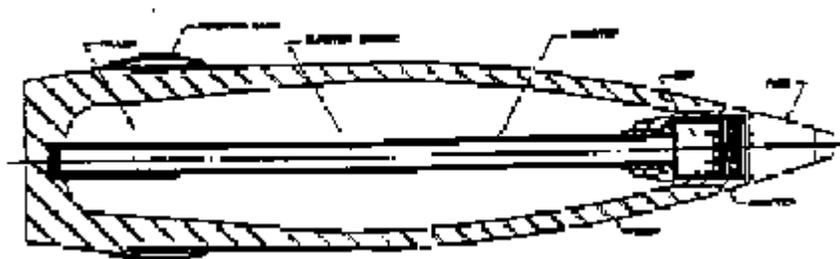
*Use:* The 155mm, M804/M804A1 projectile is used in place of the M107, HE projectile for training in indirect fire of 155mm howitzers. The M804/M804A1 projectile contains a smoke canister in the fuze well, which provides for a visual determination of functioning. It can be used in training at less cost than an M107 projectile, without the blast and fragmentation which accompany functioning of an M107.

*Description:* The M804/M804A1 is similar in weight and external configuration to the M107 HE projectile. The body of the projectile is a thick walled hollow steel shell, which contains no filler. A smoke canister, which has the same external appearance as a supplementary charge, is contained in the deep fuze cavity. A threaded lifting plug closes the fuze cavity at the nose of the projectile for handling and storage. A rotating band encircles the shell casing near the base and a steel base plate is welded over the base to prevent entry of propellant gasses into the interior.

<b>Weight of Projectile as fired</b> .....	90.0 to 94.6 pounds
<b>Length of Projectile w/lifting lug</b> .....	26.85 inches
<b>Filler and Weight</b> .....	None
<b>Fuzes</b> .....	PD, M557, M739 series, MTSQ, M564, M582, prox. M732 or ET, M767
<b>Propelling charges</b> .....	M3, M4, M119
<b>Color</b> .....	Blue w/white marking and brown band (M804) or yellow band (M804A1)

**Reference:** TM 43-0001-28, Army Ammunition Data Sheets for Artillery Ammunition, April 1994

## PROJECTILE, 155MM, SMOKE, WP, M104



(Best available drawing)

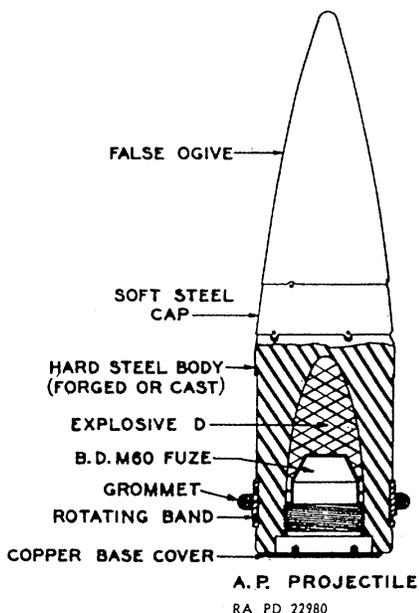
*Use:* The M104 smoke projectile was designed for anti-personnel, incendiary, spotting and screening purposes. It was primarily use by the US Marine Corps.

*Description:* This is a separate loaded, central burst WP smoke round similar to the HE round, and is used for anti-personnel, smoke screening, and spotting effects. There is a 2-in wide rotating band located near the base of the projectile. An aluminum burster tube extends the full length of the projectile cavity and is supported at the forward end by the adapter, which also holds a PD fuze. The base is boat-tailed. Upon impact the PD fuze ignites the burster charge which explodes the projectile and releases the filling. This projectile is used with 155mm guns M2 or M46.

<b>Weight of Projectile as fired</b> .....	100 pounds
<b>Length of Projectile w/fuze</b> .....	27.66 inches
<b>Filler and Weight</b> .....	White phosphorus, 15.6 pounds
<b>Fuzes</b> .....	PD, M51A5; TSQ, M55 or MT M67
<b>Propelling charges</b> .....	Unknown
<b>Color</b> .....	Unknown, assumed light green w/ yellow band and light red markings

**Reference:** Bureau of Naval Weapons, Fourth Consolidated Report of BW/CW Study, 31 March 1961

## PROJECTILE, 155mm, AP, M112



*Use.* This round was designed for old and new 155-mm guns (1944 era).

armor-piercing (AP) work with

*Projectile.* The projectile is filled with 1.44 pounds of explosive D, and fuzed with the Base Detonating Fuze M60. the projectile consists of a heavy steel body hollowed out to receive the filler and fuze, a steel adapter soldered and crimped to the nose of body and a steel windshield threaded to the adapter. The addition of the windshield continues the ogive which has a radius of approximately 65 inches. The base of the projectile is not tapered, and has a groove cut in it to receive a copper base after the M60 Fuze has been inserted. The fuze designation and lot number are stamped on the rotating band, and the appropriate delay is stenciled on the base cover. The projectile loaded and fuzed weighs 100 pounds. Since it contains a high explosive, the projectile is painted olive drab and stenciled in yellow.

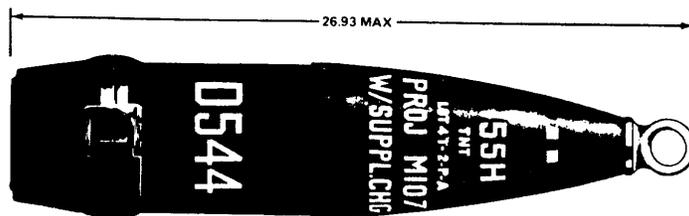
*Propelling charge.* The propelling charge for M1917-17A1-18MI or M1 and M1A1 Guns, depending on the weapon the round is to be used in.

*Primer.* Mk.II or Mk.IIA 21-grain Percussion Primer.

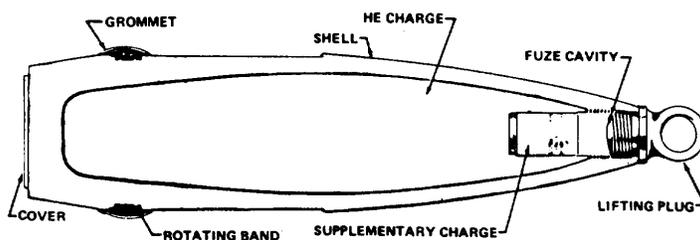
<b>Weight</b> .....	100 pounds
<b>Net Explosive Weight</b> .....	1.44 pounds
<b>Explosive Fill</b> .....	Composition D
<b>Fuze</b> .....	M60 Base Detonating

**Reference:** TM 9-1904, *Ammunition Inspection Guide*, March 1944

## PROJECTILE, 155mm, HE, M107



AR199685



AR199684

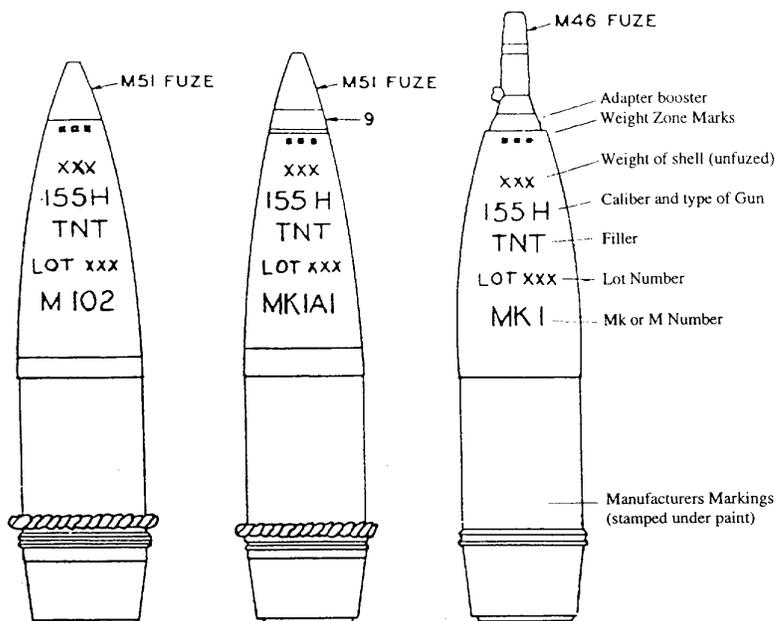
*Use.* This projectile is fired from 155mm howitzers and is used for blast effect, fragmentation, and mining.

*Description.* The projectile is a hollow steel shell filled with 14.6 pounds of TNT or 15.4 pounds of Composition B. The shape is ogival with a boattail for aerodynamic efficiency. A supplementary charge of 0.3 pounds TNT is contained in an aluminum liner in the deep fuze cavity. A threaded lifting plug closes the fuze cavity at the nose of the projectile for handling and storage. Point detonating, time or proximity (deep cavity only) fuzes may be used with this projectile. When a proximity fuze is fitted, the supplementary charge is removed. A rotating band encircles the shell casing near the base and is protected by a grommet before loading. A steel plate (base cover) is welded over the base to prevent entry of hot propellant gases into the projectile interior.

<b>Weight</b> .....	94.36 pounds
<b>Length (w/o lifting lug)</b> .....	23.89 inches
<b>Filler and Weight</b>	
<b>Comp B</b> .....	15.4 pounds
<b>TNT</b> .....	14.6 pounds
<b>Fuzes</b> .....	PD: M557, M78 series, M739 series MTSQ: M564, M582 series Prox: M728, M732
<b>Propelling charge</b> .....	M3, M3A1, M4A1, M4A2, M119, M119A1
<b>Color</b> .....	Olive drab w / yellow markings

**Reference:** TM 43-0001-28, *Army Ammunition Data Sheets, Artillery Ammunition*, April 1977

## PROJECTILE, 155mm, HE, M102, MK I, MK IA1

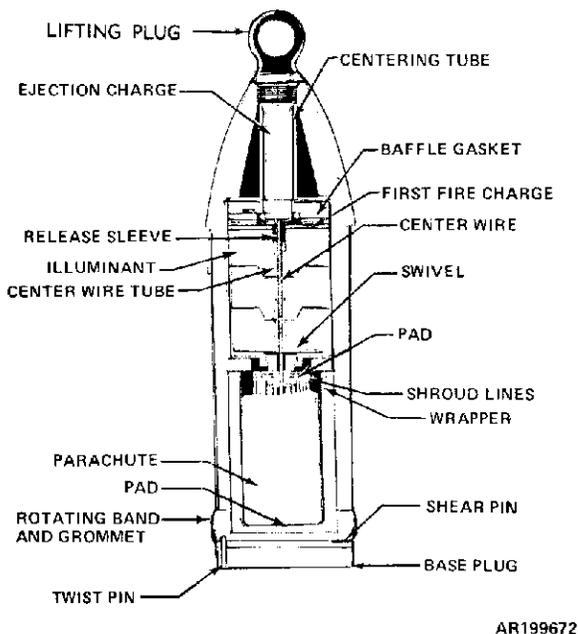


Description. The bodies of all 155-mm H.E. projectiles are very similar in construction. They range in length from 22.84 inches to 23.80 inches, have tapered bases, are manufactured from forged steel, and are hollowed out to nearly their entire length to receive the TNT filler. The recesses for rotating bands machined into the bodies vary in size depending on the weapon in which it is used. The Mk, and modified Mk series gun shells have two rotating bands, each 0.602 inch in width and separated by a space of 0.5625 inch. The M-series gun projectiles are provided with a single rotating band 2.02 inches wide. The old Mk. series H.E. shells are threaded in the nose to take the Mk IIIA adapter booster. These adapter boosters take the old M46 and M47 fuzes. The modified Mk. and M-series H.E. shell are threaded in the nose to take the M21 and M21A1 booster directly. Fuzes include Point-detonating M46, M47, M54, M51, and M51A1. Also included is the Time/Superquick Fuze M55 and M55A1, and Mechanical Time Fuze M67. The projectile is painted Olive drab with yellow stencil.

<b>Length</b> .....	22.84 - 23.80 inches
<b>Diameter</b> .....	155 mm
<b>Weight, loaded &amp; fuzed</b> .....	94.71-95.33 pounds
<b>Filler</b> .....	TNT
<b>Weight of filler</b> .....	.15.17 - 15.56 pounds
<b>Fuze</b> .....	Point Detonating M46, M47, M54, M51, M51A1 Time/Superquick M55, M55A1 Mechanical Time M67
<b>Color</b> .....	Olive Drab with yellow stencil

**Reference:** TM 9-1904, *Ammunition Inspection Guide*, 2 March 1944, *Complete Round Chart*, No. 5981, January 1940

## PROJECTILE, 155mm, ILLUMINATING, M118 SERIES



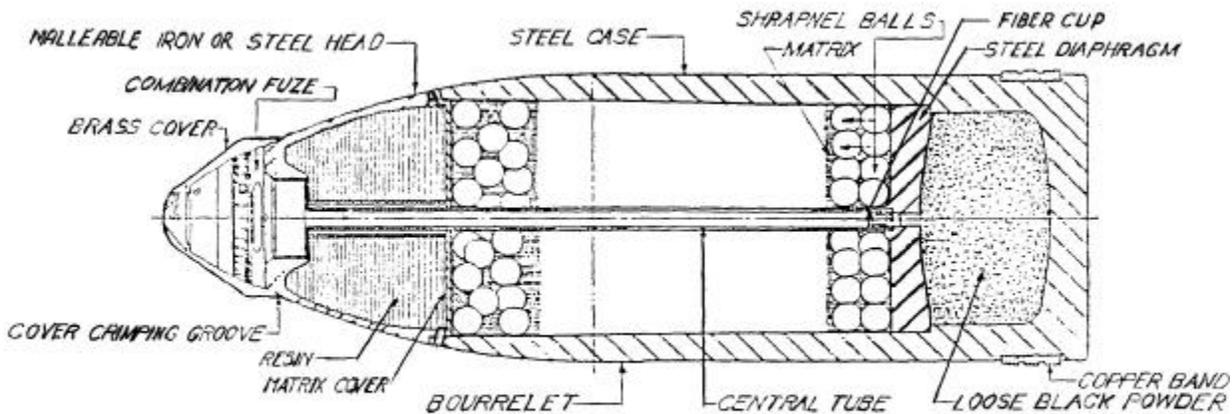
*Use.* This projectile is fired from 155mm howitzer for battlefield illumination at night or during other conditions of reduced visibility.

*Description.* The projectile is a hollow steel shell containing an illuminant canister, an ejection charge in the nose, and a parachute in the base. A threaded nose cavity is provided for an Mechanical Time Super Quick (MTSQ) fuze, and a lifting plug installed in the fuze cavity for shipment and handling. The base of the projectile is closed with a steel plug retained by twist and shear pins. A center wire connecting the parachute suspension lines and the illuminant canister runs through the illuminant charge within a tube and is secured at the forward end by solder attachment to a release sleeves. The release sleeve is imbedded in the forward end of the illuminant assembly behind a first fire charge. A rotating band encircles the projectile near the base and is protected by a grommet for shipment and handling.

<b>Weight</b> .....	102 pounds
<b>Length (with lifting lug)</b> .....	23.40 inches
<b>Filler</b> .....	illuminant composition
<b>Filler weight</b> .....	4.30 pounds
<b>Fuze</b> MTSQ, M501 series	
<b>Propelling charge</b> .....	M3, M4 series
<b>Color</b> .....	Gray w / white markings (later manufacture - Olive Drab w/ white markings and a white band)

**Reference:** TM 43-0001-28, *Army Ammunition Data Sheets, Artillery Ammunition*, April 1977

## PROJECTILE, 155mm, SHRAPNEL, MK I



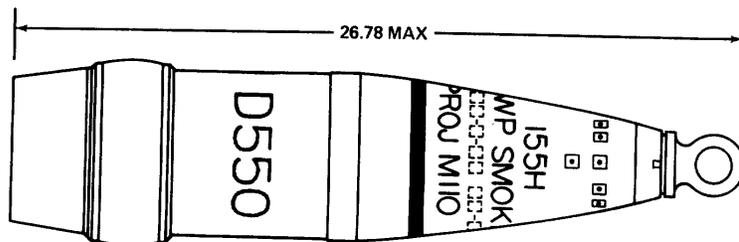
*155<sup>mm</sup> SHRAPNEL - 95 LBS. - MARK I.*

The round was developed during World War I and used against aircraft at that time. By 1944, however, due to added armament on aircraft, shrapnel served no effective service use, and was therefore classified limited standard. Existing stocks were used for target practice.

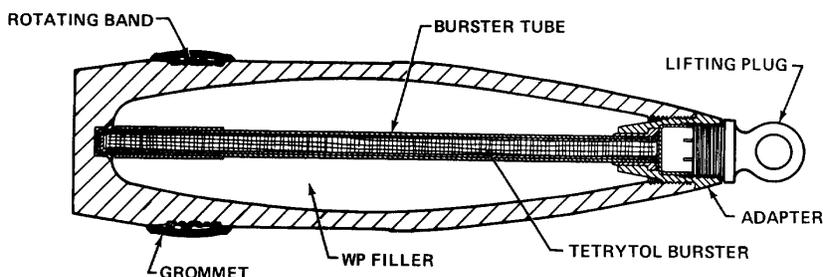
<b>Length without fuze</b> .....	16.9 inches
<b>Length, Overall</b> .....	18.74 inches
<b>Diameter</b> .....	155 mm
<b>Weight, loaded &amp; fuzed</b> .....	95 pounds
<b>Expelling Charge</b> .....	1.35 pounds Black Powder
<b>Filler</b> .....	800± Lead Balls
<b>Fuze</b> .....	45 sec Combination Fuze

**Reference:** TM 9-1904, *Ammunition Inspection Guide*, 2 March 1944  
*Complete Round Chart, No. 5981*, January 1940

## PROJECTILE, 155mm, SMOKE, WP, M110 AND M110E1



AR 199679-A



*Use.* These projectiles are fired from 155mm howitzers to produce screening smoke. The projectiles also have a slight incendiary effect.

*Description.* The 155mm Smoke White Phosphorous (WP), M110, and M110E1 projectiles consists essentially of a steel shell (casing) containing an M6 burster loaded with tetryl running through the center of the shell, and 15.6 pounds of White Phosphorous. An adapter in the nose of the projectile is threaded to receive the fuze. A rotating band encircles the projectile case near the base and is protected by a grommet for shipment and handling. A PD fuze is normally used with these projectiles. Except for the WP contents, these projectiles are exactly the same as the projectile H/HD. The ballistics and configuration are the same as the HE, M107 projectile.

<b>Weight with lifting lug</b> .....	98.49 pounds
<b>Length (w/ lifting lug)</b> .....	26.78 inches
<b>Filler</b> .....	White Phosphorous
<b>Filler weight</b> .....	15.6 pounds
<b>Fuzes</b> .....	PD: M557, M739 MTSQ: M564
<b>Propelling charges</b> .....	M3 / M4 series, M119, M119A1
<b>Color</b> .....	Light Green w / yellow band and light red markings

**Reference:** TM 43-0001-28, *Army Ammunition Data Sheets, Artillery Ammunition*, April 1977

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**APPENDIX D**  
**REPORTS/STUDIES**  
**(Not Used)**

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**APPENDIX E**

**LETTERS/MEMORANDA/  
MISCELLANEOUS ITEMS**

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**APPENDIX E**

**LETTERS/MEMORANDA/MISCELLANEOUS ITEMS**

E-1 St. Louis District

1998 Additional Formerly Used Defense Site (FUDS), St. Chaffee, AR letter dated 28 October 1998. St. Louis, MO, Backup Files

E-2 Customer Order/MIPR

2001 Customer Order transferring money to start documentation for supplement report on Camp Chaffee, during Fiscal Year 2002

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## **APPENDIX E-1**

### **Letter, Commander U.S. Army Engineer District Little Rock**

**28 October 1998**

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MEMORANDUM FOR Commander, U. S. Army Engineer District, Little Rock,  
 ATTN: CESWL-PM-M, P.O. Box 867,  
 Little Rock, AR 72203-0867

SUBJECT: Additional Formerly Used Defense Site (FUDS), Ft. Chaffee, AR

1. We are currently working on the Ordnance and Explosives Archives Search Report for Ft. Chaffee, AR, with emphasis on the portions of the installation recently declared excess.
2. During our research, we interviewed an individual who was involved in ordnance disposal at Ft. Chaffee during the 1950's. He provided a map that was developed during that time period indicating many areas where ordnance was either found or destroyed.
3. There is one area outside the boundaries of the Fort where ordnance was found and removed according to the map. The attached maps indicate the general location and extent of this area.
4. In our opinion the map is credible. We verified all of the locations shown on the map that are inside the Ft. Chaffee boundaries.
5. Aside from this interview, we found nothing during our research to indicate this area was a designated impact area. It is west of and near a heavily used impact area inside the Fort, but known firing was to the east.
6. Even though ordnance was removed from the area, it is unlikely all of the ordnance was found.
7. It is our belief this area outside the boundaries should be addressed as a FUDS site. It is recommended your office investigate this area to see if it should be included in a revised Inventory Project Report for the FUDS portions of Ft. Chaffee.
8. If you need additional information, contact Ted Moore at (314) 331-8849.

FOR THE COMMANDER:

**SIGNED**  
 Melvin W. Baldus

Encl

MELVIN W. BALDUS, P.E.  
 Chief, Engineering Division

*MOORE*  
 ED-P  
*DACE*  
 ED-P

*BERKER*  
 ED-X

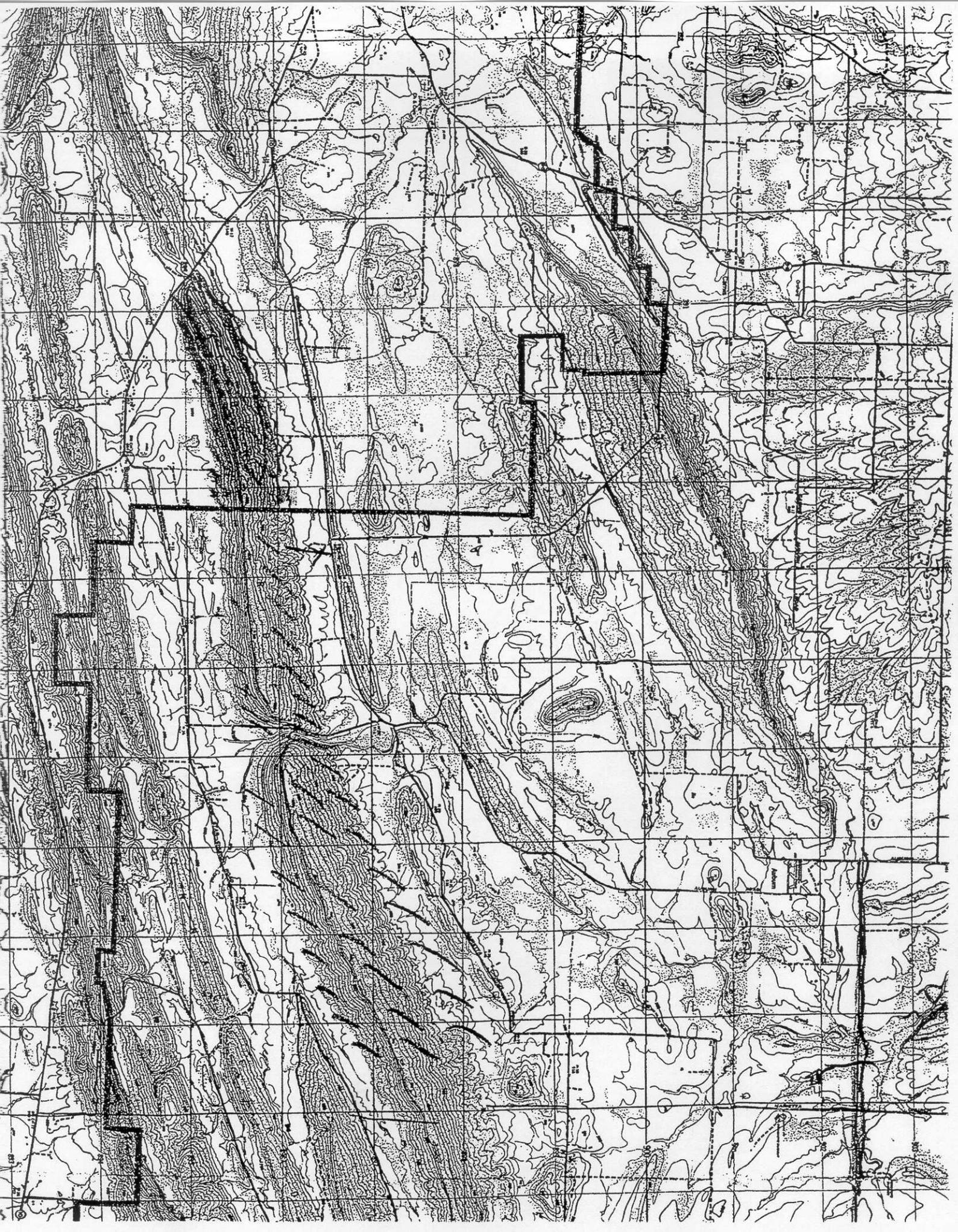
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**APPENDIX E-2**  
**Customer Order/ MIPR**  
**12 December 2001**

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583963

AMENDMENT DATE  
12-DEC-2001CO NUMBER  
W41XDE13448298AMEND NO.  
00000

TO: BUDGET, MANPWR & MANAGEMENT BR  
CEMVS-RM-B  
USARMY ENGR DIST ST LOUIS  
1222 SPRUCE ST ATTN: RM-B  
  
ST LOUIS, MO 63103-2833

FROM: USAED LITTLE ROCK DISTRICT  
CESWL  
ATTN: CESWL-RM-F  
PO BOX 867  
  
LITTLE ROCK, AR 72203-0867

ITEM NO.	DESCRIPTION (Federal stock number, nomenclature, specification and/or drawing No., etc.)	QTY	UNIT	UNIT PRICE	TOTAL PRICE
1	CAMP CHAFFEE UPDATE ARCHIVES SEARCH REPORT	0	LS	.00	\$25,000.00
	ACCOUNTING CLASSIFICATION 21 NA 2002 2020.0000 M4 2002 08 8071 49300821000	25FB		NA 34066 00008735	
	INITIAL ACCOUNTING CLASS 21 2020.0000 08 49300821000			WORK CAT/WORK CAT ELEM: 72180 /99999	

EXPIRATION DATE 30-SEP-2002

RA TECHNICAL POC: MOREHEAD, MARGARET J  
RA FINANCIAL POC: BISHOP, BRENDA L  
RA FINANCIAL POC ADDRESS: 700 WEST CAPITOL

CESWL-PM-M 501-324-7134  
CESWL-PM-M 501-324-5660

LITTLE ROCK, AR 72201

PA TECHNICAL POC: MICHAEL E DACE 314-331-8036  
PA FINANCIAL POC: LAUREL A LANE 314-331-8037

GRAND TOTAL  
\$25,000.00

MAIL INVOICES TO (Payment will be made by)  
USACE FINANCE CENTER  
LITTLE ROCK DISTRICT M4  
5722 INTEGRITY DRIVE  
  
MILLINGTON, TN 38054-5005

GO CERT DATE  
12-DEC-2001

AUTHORIZING OFFICER (ELECTRONICALLY SIGNED BY) TITLE  
BOGGS, THOMAS G. CIVIL ENGINEER

GO APPR DATE  
12-DEC-2001

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1. TO (Requiring Activity Address) (Include ZIP Code) USAED LITTLE ROCK DISTRICT ATTN: CESWL-RM-F BOX 867  LITTLE ROCK AR 72203-0867	2. CUSTOMER ORDER NUMBER W41XDE13448298	3. AMENDMENT NO. 0
	4. DATE (Signature Date) 13-DEC-2001	5. AMOUNT 25,000.00

6. The CUSTOMER ORDER identified above is accepted and the items requested will be provided as follows: (Check as Applicable)

- a.  ALL ITEMS WILL BE PROVIDED THROUGH REIMBURSEMENT (Category I)
- |                                     |                                 |                          |                              |                   |
|-------------------------------------|---------------------------------|--------------------------|------------------------------|-------------------|
| <input type="checkbox"/>            | AUTOMATIC REIMBURSEMENT TFO     | <input type="checkbox"/> | FUNDED REIMBURSEMENT TFO     | ACCEPTED AS       |
| <input type="checkbox"/>            | AUTOMATIC REIMBURSEMENT NON-TFO | <input type="checkbox"/> | FUNDED REIMBURSEMENT NON-TFO | ECONOMY ACT ORDER |
| <input checked="" type="checkbox"/> | AUTOMATIC REIMBURSEMENT IPAC    | <input type="checkbox"/> | FUNDED REIMBURSEMENT IPAC    |                   |
- b.  ALL ITEMS WILL BE PROCURED BY THE DIRECT CITATION OF FUNDS (CATEGORY II)
- |                          |                          |
|--------------------------|--------------------------|
| <input type="checkbox"/> | DIRECT FUND CITE TFO     |
| <input type="checkbox"/> | DIRECT FUND CITE NON-TFO |
- c.  ITEMS WILL BE PROVIDED BY BOTH CATEGORY I AND CATEGORY II AS INDICATED BELOW
- d.  THIS ACCEPTANCE, FOR CATEGORY I ITEMS, IS QUALIFIED BECAUSE OF ANTICIPATED CONTINGENCIES AS TO FINAL PRICE. CHANGES IN THIS ACCEPTANCE FIGURE WILL BE FURNISHED PERIODICALLY UPON DETERMINATION OF DEFINITIZED PRICES, BUT PRIOR TO SUBMISSION OF BILLINGS.

7.  CUSTOMER ORDER NUMBERS(S) IDENTIFIED IN BLOCK 13, (REMARKS) IS NOT ACCEPTED (IS REJECTED) FOR THE REASONS INDICATED.

8. TO BE PROVIDED THROUGH REIMBURSEMENT CATEGORY I			9. TO BE PROCURED BY DIRECT CITATION OF FUNDS CATEGORY II		
ITEM NO. a.	QUANTITY b.	ESTIMATED PRICE c.	ITEM NO. a.	QUANTITY b.	ESTIMATED PRICE c.
1		25,000.00			
d. TOTAL ESTIMATED PRICE			d. TOTAL ESTIMATED PRICE		
25,000.00			25,000.00		
10. ANTICIPATED DATE OF OBLIGATION FOR CATEGORY II ITEMS			11. GRAND TOTAL ESTIMATED PRICE OF ALL ITEMS		
			25,000.00		

12. FUNDS DATA (Check if Applicable)

- a.  ADDITIONAL FUNDS IN THE AMOUNT OF \_\_\_\_\_ ARE REQUIRED (See Justification in block 13)
- b.  FUNDS IN THE AMOUNT OF \_\_\_\_\_ ARE NOT REQUIRED AND MAY BE WITHDRAWN

13. REMARKS

RA TECHNICAL POC: MOREHEAD, MARGARET J  
501-324-7134  
PA TECHNICAL POC: MICHAEL E DACE  
314-331-8036

RA FINANCIAL POC: BISHOP, BRENDA L  
501-324-5660  
PA FINANCIAL POC: LAUREL A LANE  
314-331-8037

14. ACCEPTING ACTIVITY (Complete Address)  
BUDGET, MANPWR & MANAGEMENT BR  
USARMY ENGR DIST ST LOUIS  
1222 SPRUCE ST ATTN: RM-B

ST LOUIS, MO 63103-2933

15. TYPED NAME AND TITLE OF AUTHORIZED OFFICIAL  
ROSEMARY CRAIG  
BUDGET OFFICER

16. ELECTRONICALLY SIGNED BY  
ROSEMARY CRAIG

17. DATE  
13-DEC-2001

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**APPENDIX F**  
**REAL ESTATE DOCUMENTS**  
**(Not Used)**

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**APPENDIX G**  
**NEWSPAPER/JOURNALS**  
**(Not Used)**

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**APPENDIX H**  
**INTERVIEWS**

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## APPENDIX H

### INTERVIEWS

<b>PAGE</b>	<b>INDIVIDUAL CONTACTED</b>	<b>DATE/POSITION ORG</b>
H-1	David Burrough	January 20002 Retired Real Estate Corps of Engineers Little Rock District
H-2	John Miller	8 April 2002 EOD Arkansas State Police
H-3	SGM James Wacaster Mitch Strunk	8 April 2002, Range Control Former Range Control Camp Chaffee
H-4	Sherman Hiatt	8 April 2002 Mayor, Charleston, AR
H-5	Joyce Cormack	8 July 2002, Landowner
H-6	Reed Haynes	9 July 2002 Sheriff of Franklin County and Landowner
H-7	Ken Shook	9 July 2002 Ranch Manager, Patterson Properties
H-8	Darrell Loftin	9 July 2002 Manager, Patterson Properties
H-9	Paul Dunn	9 July 2002, Landowner
H-10	Herman Haynes	9 July 2002, Landowner
H-11	Gary Grimes	9 July 2002 and 31 July 2002 Former Sheriff
H-12	Isaac Bollinger	10 July 2002; Landowner
H-13	Russell Dunn	24 July 2002; Landowner
H-14	Marty/Marion Driscoll	24 July 2002; Landowner
H-15	Marty Driscoll	24 July 2002; Landowner
H-16	James Fizer	24 July 2002; Landowner

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<b>H-17</b>	<b>Ed Thomas</b>	<b>30 July 2002; Landowner</b>
<b>H-18</b>	<b>Jerry Russell</b>	<b>30 July 2002; Landowner</b>
<b>H-19</b>	<b>Lavel Durbrow</b>	<b>30 July 2002; Landowner</b>
<b>H-20</b>	<b>Mrs. Norman Harris</b>	<b>31 July 2002; Landowner</b>
<b>H-21</b>	<b>James Young</b>	<b>31 July 2002; Landowner</b>
<b>H-22</b>	<b>Ron Metcalf</b>	<b>31 July 2002; Landowner</b>
<b>H-23</b>	<b>Kevin Robinson</b>	<b>2 August 2002; Landowner</b>
<b>H-24</b>	<b>Linda Crocker</b>	<b>2 August 2002; Landowner</b>
<b>H-25</b>	<b>Marvin Shirley</b>	<b>2 August 2002; Landowner</b>
<b>H-26</b>	<b>Ronnie Martin</b>	<b>7 August 2002, Landowner</b>
<b>H-27</b>	<b>Norman Martin</b>	<b>7 August 2002, Landowner</b>

**CONVERSATION RECORD**

Subject Camp Chaffee		Date 1/8/02
Person Calling Ted Moore	Office Corps of Engineers CEMVS-ED-DC	Telephone number 314-331-8249
Person Called David Burrough	Office Real Estate, retired Little Rock District	Telephone number 501-868-8317

**Summary of Conversation**

Called Mr Burrough at the request of Margaret Morehead, Little Rock District. Mr Burrough indicated that several people had told him of long rounds going into the strip of land about 1 mile wide running from the north border of Ft Chaffee to the Franklin/Logan County line. He initially indicated that the engineer area, originally part of Camp Chaffee, on the north side of the river had been used as an impact area, but retracted after talking to his mother and a friend who said the area was not an impact area.

**CONVERSATION RECORD**

Subject Camp Chaffee		Date 4/8/02
Person Calling Ted Moore	Office Corps of Engineers CEMVS-ED-DC	Telephone number 314-331-8249
Person Called John Miller	Office EOD, Arkansas State Police	Telephone number 479-783-5195 or 479-996-3129 (home)

**Summary of Conversation**

Officer Miller has been in law enforcement in the area for 32 years, specifically in EOD for 22 years. Is not aware of any ordnance incidents related to areas outside Ft. Chaffee. Offered his services if we find any ordnance during our site visit.

### CONVERSATION RECORD

Subject		Date
Camp Chaffee		4/8/02
Person Calling	Office	Telephone number
Ted Moore	Corps of Engineers CEMVS-ED-DC	314-331-8249
Persons Called	Office	Telephone number
SGM James Wacaster	Range Control, Camp Chaffee	479-484-2206
Mitch Strunk	Former Range control, Camp Chaffee	479-639-2461

#### **Summary of Conversation**

Met with these gentlemen at Ft Chaffee on 4/8/02. SGM Wacaster provided coordinates of 4 rounds that supposedly went outside the boundary:

075010, 15 Aug 79, howitzer  
070010, 14 Jun 79, 8" howitzer  
033055, 14 Jul 81, 4.2 mortar  
023048, 14 Jul 81, 105mm

Mr. Strunk indicated an area south of Branch, AR where a 105mm round was found near a house. I indicated it seemed well outside the range of 105mm round, he said it was very likely the round was carried to that location.

SGM Wacaster also provided Lavel Durbrow (501-996-4202) as a person who lives near the Devil's Backbone area.

**CONVERSATION RECORD**

Subject Camp Chaffee		Date 4/8/02
Person Calling Ted Moore	Office Corps of Engineers CEMVS-ED-DC	Telephone number 314-331-8249
Person Called Sherman Hiatt	Office Mayor, Charleston, AR	Telephone number 479-965-2585

**Summary of Conversation**

Actually was a chance meeting with the mayor. I stopped at the fire station to see if there is a sheriff's station in Charleston. After I indicated the purpose of my stop, Mr Hiatt introduced himself as the mayor. He has been mayor for 12 years, has lived in the area for 44 years. He only remembers the 2-8" rounds going into the area east of Ft. Chaffee. When I asked about the round described by Mitch Strunk, he said the round was likely carried there. He said they have several incidents of people removing rounds from Ft. Chaffee.

He indicated there is no sheriff's station in Charleston, I need to call the office in Ozark.

**CONVERSATION RECORD**

Subject		Date
Camp Chaffee		7/8/02
Person Calling	Office	Telephone number
Ted Moore	Corps of Engineers CEMVS-ED-DC	314-331-8249
Person Called	Office	Telephone number
Joyce Cormack	Landowner near Devil's Backbone	479-996-4474

**Summary of Conversation**

Called the Cormack residence to see if they have found ordnance on their property and to get permission to inspect their property. Ms Cormack indicated they have owned the property since 1959 and have never found ordnance. The property is used for cattle farming and hay production. She said that aside from leveling a few mounds, the land has not been excavated. She said it would be OK to inspect the property, they just want us to call before we get on the property.

### CONVERSATION RECORD

Subject		Date
Camp Chaffee		7/9/02
Person Calling	Office	Telephone number
Ted Moore	Corps of Engineers CEMVS-ED-DC	314-331-8249
Person Called	Office	Telephone number
Reed Haynes	Landowner, former chief eputy and current sheriff of Franklin County	479-965-7239

#### Summary of Conversation

I called Mr Haynes to see if he is aware of ordnance on his property and to see if we can inspect his property. Mr Haynes is like one stop shopping, read on.

Mr Haynes is 64 years old and has lived in the area his entire life. His family was displaced from their home when the government began buying land for Camp Chaffee, specifically they lived near Potato Hill.

He was Franklin County sheriff in the late 60's – early 70's and has been elected sheriff again. He drove the mail route that services all of the landowners in the area we are researching on the east side of Ft. Chaffee for 30 years. As a result of living in the area his whole life, carrying mail, and being sheriff, he pretty well knows everyone and everything that has gone on in the area.

He said no shells have ever landed on his property. The most recent round to land on private property was on James Young property. He said the range officer, Charles Williams, thoroughly investigated the incident. I told him we knew of an incident in 1981. He said that is the one.

He said there are shell craters in the cemetery on the Wagner property. The nearest home belongs to Ronnie Martin. The craters are near Gunter Ridge.

I asked him about the Bollinger property. He said W. H. Bollinger is deceased and his grandson Isaac Bollinger now owns all of the 1600 acre Bollinger property. 720 acres of this property are in our area of concern. He said there has never been a report of ordnance on the Bollinger property. He said Isaac Bollinger lives in Little Rock, but has a home and a caretaker on the property.

Mr Haynes wants to go with us when we inspect the area. He says there won't be any problem getting on any of the properties, he knows everyone. He will take us to the known areas where ordnance incidents have occurred. We are to call him the evening of Aug 7 to make final arrangements for the site inspection.

Key people that he suggested we call are:

Isaac Bollinger – major landowner  
Jerry Russell - landowner  
James Young - landowner  
Ronnie Metcalf – Wagner property

I told him we are also looking at the west end of Devil's Backbone just outside Ft. Chaffee and he said Gary Grimes (461-4333) was the Sebastian County sheriff for 10 years and had been in law enforcement his entire career. Mr Grimes will be Mr. Haynes chief deputy.

In a later conversation with Mr. Haynes, I asked him about the Herman Haynes property. He said Herman Haynes is his father and he has alzheimers. He said he now has all of his father's land. He indicated a depression on a piece of his father's property that might be a crater.

**CONVERSATION RECORD**

Subject Camp Chaffee		Date 7/9/02
Person Calling Ted Moore	Office Corps of Engineers CEMVS-ED-DC	Telephone number 314-331-8249
Person Called Ken Shook	Office Ranch Mgr, Patterson properties	Telephone number 479-996-7840

**Summary of Conversation**

Mr. Shook is not aware of any ordnance being found on the Patterson property in our area of concern. He said he believes the property has been sold. He said I should call his boss, Darrell Loftin (479-996-9960), to see if the property has been sold.

Mr. Shook indicated there was a sweep done on Patterson property north of Chismville Rd about 4-5 years ago. He thought the sweep was done by someone from Missouri.

**CONVERSATION RECORD**

Subject Camp Chaffee		Date 7/9/02
Person Calling Ted Moore	Office Corps of Engineers CEMVS-ED-DC	Telephone number 314-331-8249
Person Called Darrell Loftin	Office Manager, Patterson properties	Telephone number 479-996-9960

**Summary of Conversation**

Mr. Loftin indicated the Patterson property in our area of concern has been sold to three owners.

72.48 acres to Marion Driscoll  
132.5 acres to Marvin Shirley  
10 acres to Russell Dunn

I asked Mr Loftin about the sweep that Ken Shook mentioned. He said it was probably inside Ft. Chaffee. If he is correct, the sweep is referring to one of our previous visits to Ft. Chaffee.

Mr. Loftin is not aware of any ordnance being found in our area of concern.

### CONVERSATION RECORD

Subject		Date
Camp Chaffee		7/9/02
Person Calling	Office	Telephone number
Ted Moore	Corps of Engineers CEMVS-ED-DC	314-331-8249
Person Called	Office	Telephone number
Paul Dunn	Landowner	479-996-2512

#### Summary of Conversation

I called Mr Dunn to see if there have been ordnance incidents on his property and to see if we can inspect his property.

Mr Dunn is 59 years old and has lived in the area his entire life. He has lived on the property he owns since 1955. There have been no ordnance incidents on his property.

He began telling me who owns the property around him:

W.J. Johnson is deceased. His daughter and son-in-law now own the land, Wilburn and Rebecca Jones.

The Edward Thomas property runs from Hwy 10 up to Devil's Backbone. He said Mr. Thomas is 90 years old, hard of hearing.

The Marion Driscoll property runs from Hwy 10 up to Devil's Backbone. He suggested I call Marty Driscoll (Marion Driscoll's brother) to get Marion's phone number. Marty Driscoll owns property along Chisolmville Rd, 479-996-4757.

Roy Clifton is in the hospital near death. Mr Dunn leases his property and has for many years. Mr. Dunn said he has been all over the Clifton property and has never found ordnance. He said it would not be a problem to inspect the Clifton property.

Mr Dunn indicated an ordnance incident occurred near Washburn. He said about 8-10 years ago, the National Guard set up wrong and sent several artillery rounds onto private property owned by people named Rogers. He said the incident was near McCartney Camp Rd. Washburn is about 10 miles southeast of Greenwood along Hwy 10. He said Gary Grimes should know about the incident.

He asked that we call him the day before our site inspection.

**CONVERSATION RECORD**

Subject		Date
Camp Chaffee		7/9/02
Person Calling	Office	Telephone number
Ted Moore	Corps of Engineers CEMVS-ED-DC	314-331-8249
Person Called	Office	Telephone number
Herman Haynes	Landowner, east side of Ft. Chaffee	479-965-2361

**Summary of Conversation**

Called Mr. Haynes to see if he is aware of ordnance incidents on his property or the surrounding area and to see if we can inspect his property. He indicated a round exploded about a mile from his property. I asked if we could meet with when we are there for the inspection. He said yes but call him before we come to make a firm date. He said it is OK to inspect his property.

### CONVERSATION RECORD

Subject Camp Chaffee		Date 7/9/02 & 7/31/02
Person Calling Ted Moore	Office Corps of Engineers CEMVS-ED-DC	Telephone number 314-331-8249
Person Called Gary Grimes	Office Former Sheriff, Sebastian County	Telephone number 479-461-4333 Mobile 479-996-2525 Home

#### Summary of Conversation

I called Mr Grimes on 7/9/02 at the suggestion of Reed Haynes. Mr Grimes just retired from being Sebastian County sheriff for the past 10 years.

He indicated a large unexploded round was found on Devil's Backbone about 6 yrs ago.

Mr Grimes said he would go with us to the area where the round was found. He said he knows everyone in the area, and getting around the area won't be a problem. He asked that we call him the week before our site visit.

I told him I was contacting landowners in the area. He said the Pattersons would be hard to find. He suggested I call the ranch manager, Ken Shook.

I called Mr Grimes back on 7/31/02 as he had requested and also to ask him for more help.

We agreed to meet at the Greenwood County Courthouse, Sheriff's Office, at 0830 on Tuesday, 6 Aug.

I had a couple of other items to discuss:

I told him several people had mentioned the incident at Washburn and that he would know the details. He said he was not aware of the Washburn incident but will check with his deputies and get us to the right place if at all possible. During this part of the discussion, Mr. Grimes indicated an incident at Stone Hill (near Hwy 22) where a probable 155mm round was found partially buried. He said the round was removed by the proper authorities. He agreed to take us there.

I told him we were having trouble getting in touch with Larry Williams and that the Williams property was a key piece of the puzzle. He said we probably would be better off working through Larry's son Richard. Mr. Grimes said he would contact Richard and get things approved for us to get inspect the property.

### CONVERSATION RECORD

Subject		Date
Camp Chaffee		7/10/02
Person Calling	Office	Telephone number
Ted Moore	Corps of Engineers CEMVS-ED-DC	314-331-8249
Person Called	Office	Telephone number
Isaac Bollinger	Landowner	479-965-2937

#### **Summary of Conversation**

I called Mr. Bollinger to see if there have been ordnance incidents on his property and to see if it is OK to inspect his property.

Mr. Bollinger owns 1100 acres in the area of concern on the east side of Ft Chaffee. The land has been in his family for several generations and he recently took ownership of the property shown as owned by W.H. Bollinger (his grandfather). Mr. Bollinger indicated there has never been ordnance found on the property. They have cut hay off about 40% of the land without incident. He says some of the land is wooded and rough. It is OK for us to inspect the property. We are to call his ranch manager, John Miesner, 479-965-7947, before our site inspection. Mr. Miesner has keys to all the gates we need to get through.

Mr. Bollinger was concerned that we or Ft. Chaffee knew of specific problems that he had not been told about. He is concerned about his employees. I assured him that we don't know of a spot on the ground to be concerned about, but rather we are doing research to see if there are any areas of concern.

He said the only problem he's had with Chaffee is their controlled burns get out of control and jump across Rattlesnake Rd. One fire burned down an abandoned house on his property.

We talked about the risk associated with living next to an active military installation and he mentioned the incident at Washburn. He said the rounds were dummy rounds and the only damage done was one of the rounds hit a tree and split a limb. I reminded him that even though he has not found rounds on his property, it is important not to touch ordnance and to report anything he or his employees find to the sheriff.

**CONVERSATION RECORD**

Subject Camp Chaffee		Date 24 July 2002
Person Calling Pam Reed	Office Corps of Engineers CEMVS-ED-DC	Telephone number 314-331-8282
Person Called Russell Dunn	Office Private Home Owner	Telephone number 479-646-2767

**Summary of Conversation**

Tried to contact Mr. Russell Dunn at the number listed above. The lady answering the phone indicated this was no longer his number. Could not find another number to use for him.

### CONVERSATION RECORD

Subject Camp Chaffee		Date 24 July 2002
Person Calling Pam Reed	Office Corps of Engineers CEMVS-ED-DC	Telephone number 314-331-8282
Person Called Marty Driscoll	Office Private Home Owner	Telephone number 479-996-4757

#### Summary of Conversation

Explained to Mr. Driscoll our program and that we were planning on being in the area doing a site visit during the week of 5-9 Aug along the area known as Devil's Backbone. Our records indicate that his property is located in this area and we are seeking approval to inspect his property looking for evidence of ordnance, e.g. artillery rounds, mortar rounds, grenades, etc.

He has owned the property about 1 1/2 years and has not heard of any incidents, nor seen anything that would qualify as ordnance. He gave us permission to inspect his property but did not think we would find anything.

I asked him for the phone number for his brother, Marion Driscoll. Our records indicated that he also owns several acres in the area we are interested in inspecting. He indicated that his brother was not in the area but he would give us permission to be on his land.

I thanked him for his time and trouble and told him we would probably be on the property on Tuesday, 6 Aug.

### CONVERSATION RECORD

Subject Camp Chaffee		Date 24 July 2002
Person Calling Pam Reed	Office Corps of Engineers CEMVS-ED-DC	Telephone number 314-331-8282
Person Called Marty Driscoll	Office Private Home Owner	Telephone number 479-996-4757

#### **Summary of Conversation**

Explained to Mr. Driscoll our program and that we were planning on being in the area doing a site visit during the week of 5-9 Aug along the area known as Devil's Backbone. Our records indicate that his property is located in this area and we are seeking approval to inspect his property looking for evidence of ordnance, e.g. artillery rounds, mortar rounds, grenades, etc.

He has owned the property about 1 1/2 years and has not heard of any incidents, nor seen anything that would qualify as ordnance. He gave us permission to inspect his property but did not think we would find anything.

I thanked him for his time and trouble and told him we would probably be on his property on Tuesday, 6 Aug.

### CONVERSATION RECORD

Subject Camp Chaffee		Date 24 July 2002
Person Calling Pam Reed	Office Corps of Engineers CEMVS-ED-DC	Telephone number 314-331-8282
Person Called James Fizer	Office Private Home Owner	Telephone number 479-646-2767

#### **Summary of Conversation**

Explained to Mr. Fizer our program and that we were planning on being in the area doing a site visit during the week of 5-9 Aug along the area known as Devil's Backbone. Our records indicate that his property is located in this area and we are seeking approval to inspect his property looking for evidence of ordnance, e.g. artillery rounds, mortar rounds, grenades, etc.

He has owned the property about 24 years and has not heard of any incidents, nor seen anything that would qualify as ordnance. He gave us permission to inspect his property but did not think we would find anything.

I thanked him for his time and trouble and told him we would probably be on his property on Tuesday, 6 Aug.

### CONVERSATION RECORD

Subject		Date
Camp Chaffee		7/30/02
Person Calling	Office	Telephone number
Ted Moore	Corps of Engineers CEMVS-ED-DC	314-331-8249
Person Called	Office	Telephone number
Ed Thomas	Landowner	479-996-2231

#### **Summary of Conversation**

Actually spoke with Mrs. Thomas. She said they have lived there since 1949. Their property runs from the flat land up to Devil's Backbone. They have never had an ordnance incident on their property. She said it would be OK for us to inspect their property.

I asked if she had a phone number for her neighbor to the west, Rebecca Jones. She does not have a phone number and said that Mrs. Jones is very ill, receiving chemo therapy.

I asked about Larry Williams. She said the Williams had just left to work on their farm in Missouri.

**CONVERSATION RECORD**

Subject Camp Chaffee		Date 7/30/02
Person Calling Ted Moore	Office Corps of Engineers CEMVS-ED-DC	Telephone number 314-331-8249
Person Called Jerry Russell	Office Landowner	Telephone number 479-965-2498

**Summary of Conversation**

Called Mr. Russell to see if there were ordnance incidents on his property and to see if we can inspect his property. Mr. Russell has lived on the property since 1989. There was a 15' diameter hole near his house that was a shell crater. He has filled in the hole. We are to visit his house on Aug 7. He said the two 8" rounds that we know of landed on the 40 acre property south of him. That property is now owned by James Young. Mr. Russell said James Young told him of a crater in the mountain on Mr. Young's property about a mile east of the Ft. Chaffee border.

**CONVERSATION RECORD**

Subject Camp Chaffee		Date 7/30/02
Person Calling Ted Moore	Office Corps of Engineers CEMVS-ED-DC	Telephone number 314-331-8249
Person Called Lavel Durbrow	Office Lives near Devil's Backbone, works for Sgt, Wacaster	Telephone number 479-996-4202

**Summary of Conversation**

Sgt Wacaster suggested we call Mr. Durbrow. Mr. Durbrow has hunted Devil's Backbone for the past 14 years. Says he hunted the area from the Ft. Chaffee border about one mile to the west. He has never found ordnance. Said we might want to talk with Charles Cormack's son. He could not remember his name but gave directions to his house.

**CONVERSATION RECORD**

Subject Camp Chaffee		Date 31 July 2002
Person Calling Pam Reed	Office Corps of Engineers CEMVS-ED-DC	Telephone number 314-331-8282
Person Called Mrs. Norman Harris	Office Private Home Owner	Telephone number 479-996-4025

**Summary of Conversation**

Explained to Mrs. Harris our program and that we were planning on being in the area doing a site visit during the week of 5-9 Aug along the area known as Devil's Backbone. Our records indicate that his property is located in this area and we are seeking approval to inspect his property looking for evidence of ordnance, e.g. artillery rounds, mortar rounds, grenades, etc.

Her husband had passed away but this property has been in his family for years. They were married over 40 years and during that time always lived on this property. She had not heard of any incidents, nor seen anything that would qualify as ordnance. She gave us permission to inspect her property but did not think we would find anything.

I thanked her for her time and trouble and told her we would probably be on her property on Tuesday, 6 Aug.

### CONVERSATION RECORD

Subject		Date
Camp Chaffee		7/31/02
Person Calling	Office	Telephone number
Ted Moore	Corps of Engineers CEMVS-ED-DC	314-331-8249
Person Called	Office	Telephone number
James Young	Landowner	479-474-5119 home 479-474-1292 shop 479-769-1379 cell 479-651-7240 cell

#### **Summary of Conversation**

Called Mr. Young to see about ordnance incidents on his property and to get permission to inspect his property.

Mr. Young said he knows of at least two suspected craters besides the locations where the two 8" rounds landed on his property. It was hard for him to describe the locations over the phone, so we are planning to call him when we arrive in Ft. Smith and set up a time to visit with him and mark up our maps.

He said it is OK to inspect any of his property we desire. He owns property in Franklin and Logan Counties. I told him about Reed Haynes believing there are craters near the cemetery. He says that is probably on his property in Logan County.

### CONVERSATION RECORD

Subject		Date
Camp Chaffee		7/31/02
Person Calling	Office	Telephone number
Ted Moore	Corps of Engineers CEMVS-ED-DC	314-331-8249
Person Called	Office	Telephone number
Ron Metcalf	Landowner	479-783-0239

#### Summary of Conversation

Mr Metcalf owns 240 acres on the east side of Ft Chaffee. The purpose of the call was to inquire about ordnance incidents on his property and to get permission to inspect his property. In addition, I was hoping he would have information regarding the entire Wagner Trust property that has been divided among the various heirs. Mr Metcalf was very helpful. He said he is not aware of any ordnance incidents on his property or any of the Wagner Trust property. He gave permission to inspect his property and said he did not think it would be a problem to be on the former Wagner land. He suggested I call his cousin, former Linda Canfield (now divorced), since her 60 acres are adjacent to Ft. Chaffee. He also suggested I call Kevin Robinson. Mr Robinson is not an heir but owns 120 acres also adjacent to Ft. Chaffee.

Mr Metcalf indicated that James Young would probably know more about the Wagner property than anyone else. He said Mr Young leased the property for hunting and eventually bought a portion of the Wagner property in Logan County.

I told Mr. Metcalf about my conversation with Reed Haynes and that Reed thought there were craters on Wagner property near the cemetery. Mr. Metcalf thought the property that Mr Haynes is referring to is actually James Young's property in Logan County.

He said the access to his property is on Gas Well Rd, and that Mr Haynes would know the way. He said the gates look like they're locked but they are not.

### CONVERSATION RECORD

Subject		Date
Camp Chaffee		8/2/02
Person Calling	Office	Telephone number
Ted Moore	Corps of Engineers CEMVS-ED-DC	314-331-8249
Person Called	Office	Telephone number
Kevin Robinson	Landowner	479-965-7385

#### **Summary of Conversation**

Mr. Robinson owns about 120 acres on the east of Ft. Chaffee in the southern portion of the area of concern. Called Mr. Robinson to see if he has found evidence of ordnance on the property and to get permission to inspect the property.

Mr. Robinson said he has been all over the property and has not seen ordnance or craters, just some low places. Mr. Robinson was cooperative about us inspecting the property, but said he is particular about who gets on his property. I explained that we walk and take pictures and do not disturb the ground. He wanted to know exactly when we would be there. I told him it was hard to set an exact time, but it would probably be Aug 7. I told him Reed Haynes would be with us and he was less concerned then.

**CONVERSATION RECORD**

Subject		Date
Camp Chaffee		8/2/02
Person Calling	Office	Telephone number
Ted Moore	Corps of Engineers CEMVS-ED-DC	314-331-8249
Person Called	Office	Telephone number
Linda Crocker	Landowner	479-635-2297

**Summary of Conversation**

Ms Crocker owns 60 acres adjacent to Ft Chaffee in the southern portion of the area of concern. Ms Crocker obtained the land as part of the Wagner Trust. She and Ron Metcalf are cousins and heirs of portions of the Wagner property. Mr. Metcalf suggested I call her.

Mr. Metcalf did not have her phone number. I got the above number from the telephone directory. When I called, I got a message that number had been disconnected.

### CONVERSATION RECORD

Subject		Date
Camp Chaffee		8/2/02
Person Calling	Office	Telephone number
Ted Moore	Corps of Engineers CEMVS-ED-DC	314-331-8249
Person Called	Office	Telephone number
Marvin Shirley	Landowner	479-996-5543

#### **Summary of Conversation**

Mr. Shirley owns about 130 acres adjacent to Ft Chaffee just south of Devil's Backbone. He and his wife have owned the land for about 2 years. Called Mr. Shirley to see if he has found evidence of ordnance on the property and to get permission to inspect the property.

Mr. Shirley said he has been all over the property and has not seen ordnance or craters. When I asked about inspecting the property, he asked if we have credentials and official paperwork regarding the need to be on his property. I explained the FUDS program and told him we have official Corps ID. I also explained that we do nothing to disturb the ground, just walk and take pictures. He asked if we have a court order. I said no and that he can say no. He responded that he doesn't want us on his land. He wasn't rude about it, just said he doesn't want people he doesn't know on his property.

**CONVERSATION RECORD**

Subject Camp Chaffee		Date 7 Aug 2002
Person Calling Ted Moore	Office Corps of Engineers CEMVS-ED-DC	Telephone number 314-331-8249
Person Called Ronnie Martin	Office Landowner	Telephone number 479-965-7733

**Summary of Conversation**

Called Mr. Martin because we were told that he told Daniel Wagner about hand grenades and artillery rounds on the hill on his property. Mr. Martin had no idea what I was talking about, but he provided information just as valuable. He said he was mowing behind the brown brick house next to Reed Haynes property about 12 years ago and found a 105mm round partially buried. Said that Pine Bluff EOD dealt with the round.

### CONVERSATION RECORD

Subject Camp Chaffee		Date 7 Aug 2002
Person Calling Ted Moore	Office Corps of Engineers CEMVS-ED-DC	Telephone number 314-331-8249
Person Called Norman Martin	Office Landowner	Telephone number 479-965-7774

#### **Summary of Conversation**

Called Mr. Martin to see if he spoke with Daniel Wagner about hand grenades and artillery rounds on the hill on his property. Mr. Martin had no idea what I was talking about, but he provided information just as valuable. He said a round landed on the property that he and his brothers own. The incident occurred when he was a kid (he is now 51). The crater is now filled and he does not know the exact location or size of the round. He said it is in the northwest corner of the 40 acres. He also said his dad told him the round killed a cow. The military reimbursed them for the cow.

**APPENDIX I**

**PRESENT SITE PHOTOGRAPHS**

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**APPENDIX I - PRESENT SITE PHOTOGRAPHS**

**PAGE            DESCRIPTION**

**Page I-1**

**Typical Terrain on Devil's Backbone**

**Page I-2**

**Flat Land Surrounding Devil's Backbone**

**Page I-3**

**Typical Suspected Crater in East Area**

**Page I-4**

**Location of 105mm round in Washburn**

**Page I-5**

**Location of 105mm round at Stone Hill**

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Typical terrain on Devil's Backbone



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Flat land surrounding Devil's Backbone



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Typical suspected crater in East Area



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Location of 105mm round in Washburn



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Location of 105mm round at Stone Hill



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**APPENDIX J**  
**HISTORICAL PHOTOGRAPHS**  
**(Not Used)**

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**APPENDIX K**  
**HISTORICAL MAPS/DRAWINGS**  
**(Not Used)**

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**APPENDIX L**

**SITE SAFETY AND HEALTH PLAN**

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L-1            Site Safety and Health Plan for Fort Chaffee, Arkansas

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## **APPENDIX L-1**

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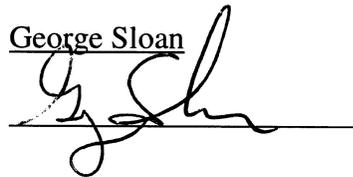
**SITE SAFETY AND HEALTH PLAN (SSHP)**  
**for**  
**FORT CHAFFEE, AR**

The purpose of this site visit is to reconnoiter, document, and photograph areas on Fort Chaffee suspected to be contaminated with unexploded ordnance and/or toxic chemical munitions.

PREPARED BY:	<u>Randy Fraser</u>
OFFICE	<u>USACE, CEMVS-ED-P</u>
ADDRESS	<u>1222 Spruce St. St. Louis, Mo</u>
PHONE	<u>(314) 331-8268</u>
DATE PREPARED	<u>07-30-02</u>

REVIEWED/APPROVED BY:

George Sloan

A handwritten signature in black ink, appearing to read "George Sloan", is written over a horizontal line.

NOTE This SSHP is to be used only for non-intrusive site visits and must be approved by safety prior to the start of the field visit. All team members must read, and comply with the SSHP, and attend the safety briefings. The Site Safety and Health Officer (SSHO) shall ensure the Safety Briefing Checklist and the SSHP acceptance form (Appendix C) is filled out prior to the start of the site visit.

**A. SITE DESCRIPTION AND PREVIOUS INVESTIGATIONS**

**1. Site Description**

a. Size 75,000

b. Present Usage (check all that apply)

- |  |  |   |
|--|--|---|
| <input checked="" type="checkbox"/> Military     | <input checked="" type="checkbox"/> Recreational | <input checked="" type="checkbox"/> Other (specify) |
| <input checked="" type="checkbox"/> Residential  | <input type="checkbox"/> Commercial              | _____   |
| <input checked="" type="checkbox"/> Natural Area | <input type="checkbox"/> Industrial              | _____   |
| <input type="checkbox"/> Agricultural            | <input type="checkbox"/> Landfill                |   |

Secured  Active  Unknown  Unsecured  Inactive

2. Past Uses Active facility during World War II, Korean War, and Viet Nam. Currently used by the Army Reserve and National Guard for a training installation. Training facilities were designed for Infantry weapons, Artillery, and Aircraft.

3. Surrounding Population (check all that apply)

- |   |                                      |   |
|---|--------------------------------------|---|
| <input checked="" type="checkbox"/> Rural | <input type="checkbox"/> Residential | <input type="checkbox"/> Urban                |
| <input type="checkbox"/> Commercial       | <input type="checkbox"/> Industrial  | <input type="checkbox"/> Other (specify)_____ |

4. Ordnance/Explosives (OE) Potential Ordnance suspected include small arms, mines, grenades, rockets, artillery, bombs, and pyrotechnics.

**B. DESCRIPTION OF ON-SITE ACTIVITIES (check all that apply)**

- |  |   |  |
|--|---|--|
| <input checked="" type="checkbox"/> Walk-through | <input checked="" type="checkbox"/> Drive-through | <input type="checkbox"/> Other (specify) |
| <input checked="" type="checkbox"/> On-Path      | <input checked="" type="checkbox"/> On-road       |  |
| <input checked="" type="checkbox"/> Off-Path     | <input checked="" type="checkbox"/> Off-road      |  |

**C. SITE PERSONNEL AND RESPONSIBILITIES**

**1. Responsibilities**

a. Project Manager The Corps of Engineers Project Manager (PM) is overall responsible for the site visit. He will assign a Team Leader, (most situations will be the PM). The PM will ensure that the SSHP is completed. Coordinates and executes the site visit.

b. Site Safety and Health Officer Individual designated to conduct safety, enforce the SSHP, conduct safety briefings, and ensure that the team leader can safely fulfill his objectives. The SSHO will maintain the safety gear, and monitor on-site operations. The SSHO is responsible for identifying, marking, and reporting any unexploded ordnance and

explosives.

## 2. Team Members

<u>NAME</u>	<u>POSITION</u>	<u>ADDRESS</u>	<u>PHONE</u>
Ted Moore	PM/Team Leader	USACE, St. Louis, MO	(314) 331-8249
Randy Fraser	SSHO/UXO Spec	USACE, St. Louis, MO	(314) 331-8268
Pam Reed	Project Assistant	USACE, St. Louis, MO	(314) 331-8282

### D. OVERALL HAZARD EVALUATION (check one)

High     Moderate     Low     Unknown

This assessment was developed using the Site Investigation Hazard Analysis and Risk Assessment Code Matrix.

**E. GENERAL PRECAUTIONS** Prior to the on-site visit, all team members are required to read this SSHP and sign the form acknowledging that they have read and will comply with it. In addition, the SSHO shall hold a brief tailgate meeting in which site specific topics regarding the days activities will be discussed. If unanticipated hazardous conditions arise, team members are to stop work, leave the immediate area and notify the SSHO. The buddy system will be enforced at all times.

### F. STANDARD OPERATION SAFETY PROCEDURES, ENGINEERING CONTROLS AND WORK PRACTICES

- 1. Site Rules/Prohibitions** At any sign of unanticipated hazardous conditions, stop tasks, leave the immediate area and notify the SSHO. Smoking, eating and drinking allowed in designated areas only.
- 2. Material Handling Procedures** Do not handle.
- 3. Drum Handling Procedures** Do not handle.
- 4. Confined Space Entry** An area identified as a Permit Required Confined space will not be entered. All confined spaces shall be considered permit required confined spaces until the pre-entry procedures demonstrate otherwise. Confined spaces may be entered without a written permit or attendant provided the space is determined not to be a permit required confined space as specified in 29 CFR 1910.146.
- 5. Electrical Protection** Overhead power lines, downed electrical wires and buried cables pose a danger of shock and electrocution. In addition, buildings may contain exposed wiring that may hold a potential load. Workers should avoid contact with any and all exposed wire and cables

**6. Spill Containment** N/A

**7. Excavation Safety** Do not enter trenches/excavations.

**8. Illumination** Site visits will be conducted during daylight hours only.

**9. Sanitation** Use existing sanitary facilities.

**10. Buddy System** Individuals will maintain constant contact with other personnel at all times. No one will work alone at any time during the site visit.

**11. Engineering Controls** N/A

**12. Insects** Wearing light colored clothing and tucking in the pant legs can reduce contact. In severely infested area it may be necessary to tape all openings. Apply repellents to both clothing and bare skin. Diethyltoluamide (DEET) is an active ingredient in many repellents, which are effective against ticks and other insects. Repellents containing DEET can be applied on exposed areas of skin and clothing. However, repellents containing permethrin should be used on only clothing. For more information on insect bites, refer to APPENDIX B of this SSHP.

**13. Poisonous Vegetation** Recognition and avoidance is the best protection. Cover all exposed skin. If it is known or suspected that an individual has been exposed, wash the effected area with soapy water.

**14. Inclement Weather** When there are warnings or indications of impending severe weather (heavy rains, strong winds, lightning, tornadoes, etc.), weather conditions shall be monitored and appropriate precautions taken to protect personnel and property from the effects of the severe weather.

**15. Hot Weather** In hot environments, cool drinking water shall be made available and workers shall be encouraged to frequently drink small amounts, e.g., one cup every 15 - 20 minutes; the water shall be kept reasonably cool. In those situations where heat stress may impact worker safety and health, work regimens shall be established. For more information on Heat Stress refer to APPENDIX A of this SSHP.

**16. Cold Weather** Cold injury (frost bite and hypothermia) and impaired ability to work are dangers at low temperatures and when the wind-chill factor is low. To guard against them; wear appropriate clothing; have warm shelter readily available; carefully schedule work and rest periods, and monitor workers' physical conditions.

**17. Off-Road Driving** Ensure all emergency equipment is available with the vehicle, i.e., tire changing equipment. Drivers shall familiarize themselves with the procedures for engaging four-wheel drive systems before the need for added traction arises. Vehicles will not be driven into an environment that is unknown, such as deep water, or an unstable surface. Vehicles will not be driven into a suspected ordnance impact area.

## **18. Ordnance**

### **a. General Information**

(1) The cardinal principle to be observed involving explosives, ammunition, severe fire hazards or toxic materials is to limit the exposure to a minimum number of personnel, for the minimum amount of time, to a minimum amount of hazardous material consistent with a safe and efficient operation.

(2) The age or condition of an ordnance item does not decrease the effectiveness. Ordnance that has been exposed to the elements for extended periods of time become more sensitive to shock, movement, and friction, because the stability agent in the explosives may be degraded.

(3) When chemical agents may be present, further precautions are necessary. If the munitions item has green markings leave the area immediately, since it may contain a chemical filler.

(4) Consider ordnance that has been exposed to fire as extremely hazardous. Chemical and physical changes may have occurred to the contents which render it more sensitive than it was in its original state.

### **b. On-Site Instructions**

(1) DO NOT TOUCH or MOVE any ordnance items regardless of the markings or apparent condition.

(2) DO NOT conduct a site visit during an electrical storm or an approaching electrical storm. If a storm approaches during the site visit leave the site immediately and seek shelter.

(3) DO NOT use a radio or cellular phone in the vicinity of a suspect ordnance item.

(4) DO NOT walk across an area where the ground cannot be seen.

(5) DO NOT drive a vehicle into a suspected OE area; use clearly marked lanes.

(6) DO NOT carry matches, cigarettes, lighters or other flame producing devices into an OE site.

(7) DO NOT rely on color code for positive identification of ordnance items or their contents.

(8) Approach ordnance items from the side; avoid approaching from the front or rear.

(9) Always assume ordnance items contain a live charge until it can be determined otherwise.

(10) Dead vegetation and animals may indicate potential chemical contamination. If a suspect area is encountered, personnel should leave the immediate area and evaluate the situation before continuing the site visit.

**c. Specific Action Upon Locating Ordnance**

(1) DO NOT touch, move or jar any ordnance item, regardless of its apparent condition.

(2) DO NOT be misled by markings on the ordnance item stating "practice", "dummy", or "inert". Practice munitions may contain an explosive charge used for spotting the point of impact. The item may also be mismarked.

(3) DO NOT roll the item over or scrape the item to read the markings.

(4) The location of any ordnance items found during site investigations should be clearly marked so it can be easily located and avoided.

(5) Reporting will be conducted in accordance with CEMVS-ED-P, Standard Operating procedure for Reporting Ordnance and Unexploded Ordnance (UXO), dated 19 January 1995.

19. Other (specify)\_\_\_\_\_

**G. SITE CONTROL AND COMMUNICATIONS**

1. **Site Map** Maintained on site by the PM or Safety Officer.

2. **Site Work Zones** N/A

3. **Buddy System** Individuals will maintain constant contact with other personnel at all times. No one will work alone at any time during the site visit.

4. **Communications**

a. **On-Site** Verbal communications will be used among team members.

b. **Off-Site** Communications shall be established on every site. Communications may be established by using a cellular phone or by public or private phone which may be readily accessible. (specify below)

Cellular phone (314) 606-4960

Public/private phone (location) \_\_\_\_\_

Other \_\_\_\_\_

**c. Emergency Signals** In the case of small groups, a verbal signal for emergencies will suffice. An emergency signal for large groups (i.e. air horn, whistle) should be incorporated at the discretion of the SSHO. (specify below)

Verbal

Nonverbal (specify) \_\_\_\_\_

**H. EMERGENCY RESPONSE** Team members are to be alert to the dangers associated with the site at all times. If an unanticipated hazardous condition arises, stop work, evacuate the immediate area and notify the SSHO. A First Aid Kit and emergency eye wash (if applicable) will be located in the SSHO's field vehicle. If qualified persons (i.e. fire department, medical facility or physician) are not accessible within five minutes of the site at least two team members shall be qualified to administer first aid and CPR.

**1. Emergency/Important Telephone Numbers**

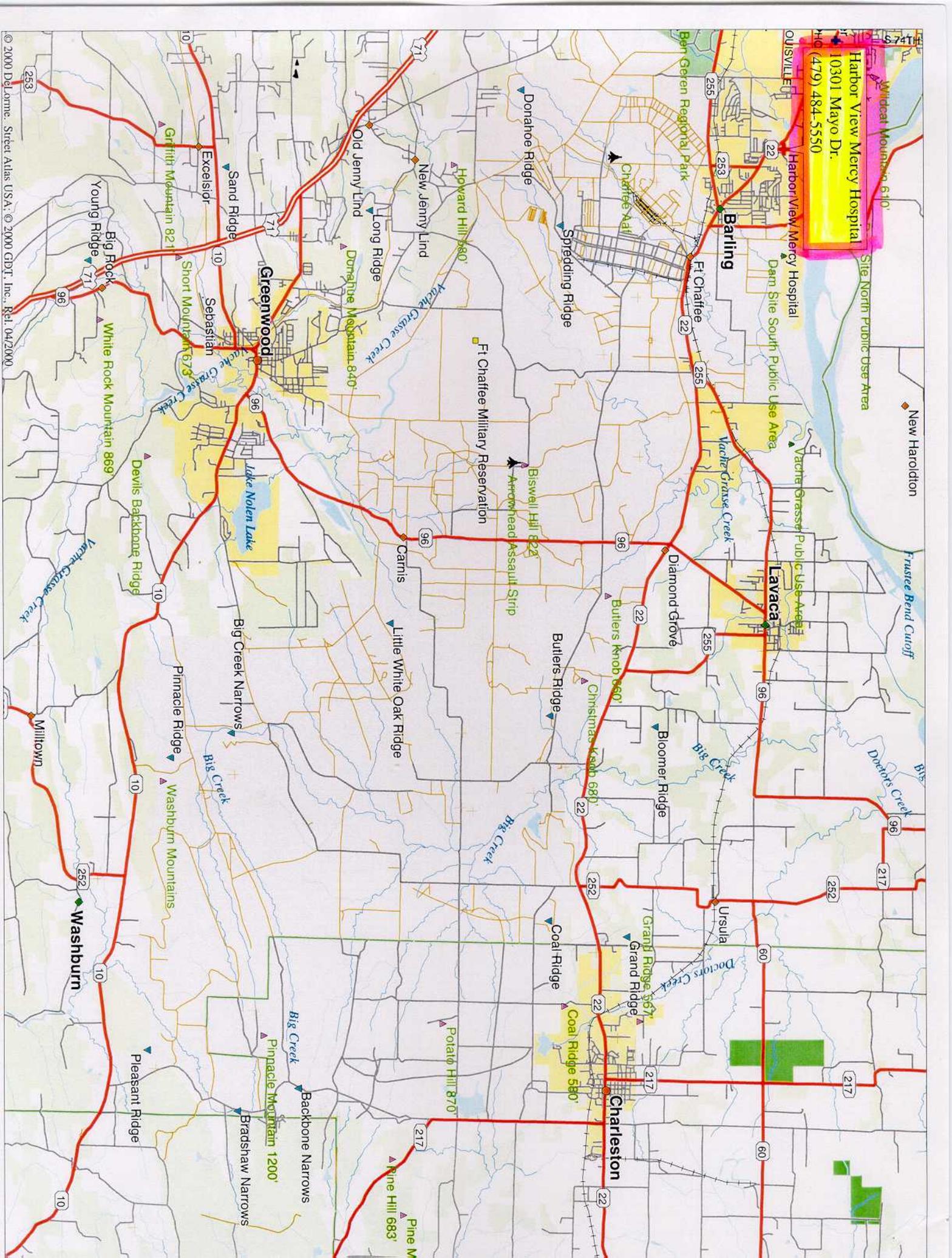
Emergency.....	911
Sabastion County Sheriffs Department.....	(479) 996-2145
Harbor View Mercy Hospital.....	(479) 484-5550
752th Ord Co (EOD) .....	(870) 540-3484
79th Ord Bn (EOD) .....	(210) 221-0476
Huntsville Safety Office .....	(205) 895-1582/1579
Huntsville Safety (after hours).....	(205) 895-1180
On-site cellular phone .....	(314) 606-4960
St. Louis Corps of Engineers .....	(314) 331-8036

**2. Hospital/Medical Facility Information**

Name: Harbor View Mercy Hospital  
Address: 10301 Mayo Dr Ave  
Ft. Smith, AR  
Phone: (479) 484-5550

Route to Medical Facility: Refer to the Site Map on following pages

Wildcat Mountain 610'  
Harbor View Mercy Hospital  
10301 Mayo Dr.  
HQ (479) 484-5550





## **I. MONITORING EQUIPMENT AND PROCEDURES**

**1. Exposure Monitoring** For non-intrusive on-site activities such as site visits, air monitoring is typically not required. However, if the site situation dictates the need for monitoring, complete the following information on a separate page and attach the page to the SSHP.

**a. Monitoring Equipment To Be Utilized** N/A

**b. Equipment Calibration Results** N/A

**c. Action Levels** N/A

### **2. Heat/ Cold Stress Monitoring**

**a.** Heat Stress monitoring criteria published in Chapter 8 of the NIOSH/OSHA/USCG/EPA "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities" shall be followed.

**b.** Cold Stress monitoring shall be conducted in accordance with the most current published American Conference of Governmental Industrial Hygienists (ACGIH) cold stress standard.

**J. PERSONAL PROTECTIVE EQUIPMENT** Typically, for non-intrusive site visits, Level D is required. If a higher level of protection is to be used initially or as contingency, a brief discussion will be attached. At a minimum personnel shall wear clothing suitable for the weather and work condition. The minimum for fieldwork shall be short sleeved shirt, long trousers, and leather or other protective work shoes or boots. If a higher level of protection is to be used initially or as contingency, a brief discussion will be attached.

**1. Footwear** Footwear providing protection against puncture shall meet the applicable requirements as stated in EM 385-1-1, paragraph 05.A.07. All activities which personnel are potentially exposed to foot hazards will be identified and documented in a hazard analysis.

**2. Hand Protection** Persons involved in activities which subject the hands to injury (e.g., cuts, abrasions, punctures, burns) shall use leather gloves.

**3. Head Protection** Hardhats shall be worn when personnel are subject to potential head injury. The identification and analysis of head hazards will be documented in a hazard analysis.

**4. Eye Protection** Personnel will wear eye protection when activities present potential injuries to the eyes. All eye protection equipment shall meet the requirements as stated in EM 385-1-1, paragraph 05.B.

**K. DECONTAMINATION PROCEDURES** Decontamination procedures are not anticipated for this site investigation. Team members are cautioned not to walk, kneel or sit on any surface

with potential leaks, spills or contamination.

**L. TRAINING** All site personnel shall have completed the training required by EM 385-1-1 and 29 CFR 1910.120 (e). The U.S. Army Corps of Engineer (USACE) Project Manager shall ensure, and the SSHO shall verify, that all on-site personnel have completed appropriate training. Additionally, the SSHO shall inform personnel before entering, of any potential site-specific hazards and procedures.

**M. MEDICAL SURVEILLANCE PROGRAM** The USACE Project Manager shall ensure, and the SSHO shall verify, that all on-site personnel are on the Medical Surveillance Program meeting the requirements of 29 CFR 1910.120, and ANZI Z-88.2, as appropriate, depending on the PPE and site specific tasks.

<u>NAME</u>	<u>HAZWOPER (ref)</u>	<u>PROVIDER</u>	<u>MEDICAL DATE</u>
<u>Ted Moore</u>	<u>11-01</u>	<u>Corps of Engrs.</u>	<u>09-00</u>
<u>Randy Fraser</u>	<u>11-01</u>	<u>Corps of Engrs.</u>	<u>06-01</u>
<u>Pam Reed</u>	<u>11-01</u>	<u>Corps of Engrs.</u>	<u>03-01</u>

**N. LOGS, REPORTS AND RECORD KEEPING** Site logs are maintained by the Project Manager and SSHO. This is to include historical data, personnel authorized to visit the site, all records, standard operating procedures, air monitoring logs and the SSHP.

**O. GENERAL** The number of personnel visiting the site shall be a limited to a minimum of two, maximum of eight. The more personnel on-site, greater the potential for an accident. The SSHO may modify this SSHP if site conditions warrant it and without risking the safety and health of the team members. This modification will be coordinated with the team members. The SSHO shall notify Corps of Engineers Safety Office in Huntsville, AL. of the change as the situation allows.

# APPENDIX A

## HEAT- RELATED INJURIES

Once the signals of a heat-related illness begin to appear, the victim's condition can quickly get worse. A heat related illness can result in death. If you see any of the signals of sudden illness, and the victim has been exposed to extremes of heat, suspect a heat-related illness.

People at risk for heat-related illness include those who work or exercise outdoors, elderly people, young children, and people with health problems. Also at risk are those who have had a heat-related illness in the past, those with medical conditions that cause poor blood circulation, and those who take medications to get rid of water from the body (diuretics).

People usually try to get out of extreme heat before they begin to feel ill. However, some people do not or can not. Those that work outdoors often keep working even after they begin to feel ill. Many times, they might not even recognize that they are in danger of becoming ill.

Heat-cramps, heat-exhaustion, and heat-stroke, are conditions caused by overexposure to heat. You can help prevent heat-stress emergencies by recognizing and properly treating symptoms. Below is a quick reference guide to heat-related emergencies:

**HEAT CRAMPS** Heat cramps are the least severe, and often are the first signals that the body is having trouble with the heat. *Symptoms* include: Muscle twitching; painful spasms in the legs, arms or abdomen.

### WHAT TO DO:

- ? Have the individual rest in a cool place.
- ? Give cool water or a commercially available sports drink.
- ? lightly stretch the muscle and gently massage the area.

**HEAT EXHAUSTION** Heat exhaustion is a more severe condition than heat cramps. *Symptoms:* cool, moist, pale, or flushed skin, headache, nausea, dizziness, weakness, and exhaustion.

**HEAT STROKE** Heat stroke is the least common but most severe heat emergency. It most often occurs when people ignore the signals of heat exhaustion. Heat stroke develops when the body systems are overwhelmed by heat and begin to stop functioning. **Heat stroke is a serious medical emergency.** *Symptoms* include: red, hot, dry skin; changes in consciousness; rapid, weak pulse; and rapid, shallow breathing.

WHAT TO DO: When you recognize a heat-related illness in its early stages, you can usually reverse it.

- ? Get the victim out of the heat.
- ? Loosen any tight clothing and apply cool, wet cloths, such as towels or sheets.
- ? If the victim is conscious, give cool water to drink. Do not let the conscious victim drink too

quickly. Give about 1 glass (4 ounces) of water every 15 minutes.

? Let the victim rest in a comfortable position, and watch carefully for changes in his or her condition. The victim should not resume normal activities the same day.

**? Refusing water, vomiting, and changes in consciousness mean that the victim's condition is getting worse. Call for an ambulance immediately if you have not already done so.**

? If the victim vomits, stop giving fluids and position them on their side.

? Watch for signals of breathing problems.

? Keep the victim lying down and continue to cool the body any way you can. If you have ice packs or cold packs, place them on each of the victim's wrists and ankles, on the groin, in each armpit, and on the neck to cool the large blood vessels.

## **APPENDIX B**

### **BITES AND STINGS**

#### **Scorpions, Bees and Spiders**

Bee stings are painful, but rarely fatal. Some people, however have a severe allergic reaction to an insect sting. This allergic reaction may result in a breathing emergency. If someone is stung by an insect, remove the stinger. Scrape it away with from the skin with your fingernail or plastic card, such as a credit card, or use tweezers. If you use the tweezers, grasp the stinger, not the venom sac. Wash the site with soap and water. Cover it to keep it clean. Apply a cold pack to the area to reduce the pain and swelling. Watch the victim for signals of an allergic reaction.

Scorpions live in dry regions of the southwestern United States and Mexico. They live under rocks, logs, and the bark of certain trees and are most active at night. Only a few species of scorpions have a sting that can cause death.

Spiders; there are also only two spiders in the United States whose bite can make you seriously sick or be fatal. These are the black widow spider and the brown recluse. The black widow is black with a reddish hourglass shape on the underside of its body. The brown recluse is light brown with a darker brown, violin-shaped marking on the top of its body. Both spiders prefer dark, out of the way places. Often, the victim will not know that he or she has been bitten until he or she starts to feel ill or notices a bite mark or swelling.

*Symptoms:* include nausea and vomiting, difficulty breathing or swallowing, sweating and salivating much more than normal, severe pain in the sting or bite area, a mark indicating a possible bite or sting, and swelling of the area.

*First Aid:* if someone has been stung by a scorpion or bitten by a spider he or she thinks is a black widow or brown recluse, wash the wound, apply a cold pack to the site, and get medical help immediately.

#### **Lyme Disease**

Lyme Disease is an illness that people get from the bite of an infected tick. Lyme disease is affecting a growing number of people in the United States. Everyone should take precautions against it. Not all ticks carry Lyme disease. Lyme disease is spread mainly by a type of tick that commonly attaches itself to field mice and deer. It is sometimes called a deer tick. This tick is found around beaches and in wooded and grassy areas. Like all ticks, it attaches itself to any warm-blooded animal that brushes by. Deer ticks are very tiny and difficult to see. They are much smaller than the common dog tick or wood tick. They can be as small as a poppy seed or the head of a pin. Adult deer ticks are only as large as a grape seed.

*Symptoms:* The first signal of infection may appear a few days or a few weeks after a tick bite.

Typically, a rash starts as a small red area at the site of the bite. It may spread up to 7 inches across. In fair-skinned people the center is lighter in color and the outer edges are red and raised. This sometimes gives the rash a bull's-eye appearance. In dark skinned people the area may look black and blue, like a bruise.

Other symptoms include fever, headache, weakness, and joint and muscle pain similar to the pain of "flu". These symptoms might develop slowly and might not occur at the same time as a rash. In fact you can have Lyme disease without developing a rash.

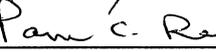
*First Aid:* If you find a tick, remove it by pulling steadily and firmly. Grasp the tick with fine-tipped tweezers, as close to the skin as possible, and pull slowly. If you do not have tweezers, use glove, plastic wrap, or a piece of paper to protect you finger. If you use your bare fingers, wash your hands immediately. Do not try to burn a tick or use other home remedies, like coating the tick with Vaseline or nail polish or picking it with a pin. Once the tick is removed, wash the area with soap and water. If available, apply antiseptic or antibiotic ointment. If you can not remove the tick or parts of the tick stay in your skin, obtain medical care. If a rash or flu like symptoms develop, seek medical attention.

# APPENDIX C

## SSHP ACCEPTANCE FORM

### ABBREVIATED SITE SAFETY AND HEALTH PLAN

I have read and agree to abide by the contents of the Site Safety and Health Plan.

<u>NAME</u>	<u>OFFICE</u>	<u>SIGNATURE</u>	<u>DATE</u>
<u>Ted Moore</u>	<u>CEMVS-ED-P</u>	<u></u>	<u>7/30/02</u>
<u>Randy Fraser</u>	<u>CEMVS-ED-P</u>	<u></u>	<u>7/30/02</u>
<u>Pam Reed</u>	<u>CEMVS-ED-P</u>	<u></u>	<u>7/30/02</u>
_____	_____	_____	_____
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**SITE SURVEY SAFETY BRIEFING 8/6/02**

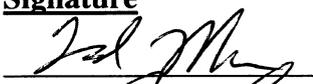
(Check subjects discussed) Date

**SITE SPECIFIC INFORMATION**

- Purpose of Visit
- Identify Key Site Personnel
- Site Description/Past Use
- Results of Previous studies
- Potential Site Hazards
- OE Safety Procedures
- Site SOP
- Site Control and Communications
- Emergency Response
- Location of First aid Kit
- Emergency Phone Numbers
- Map to Facility
- PPE
- Weather Precautions
  - Cold/Heat
  - Severe Weather

**Safety Briefing Attendance**

All team members and any accompanying personnel will be briefed and sign this form.

<u>Name (Print)</u>	<u>Organization</u>	<u>Signature</u>
<u>Ted Moore</u>	<u>CEMVS-ED-P</u>	<u></u>
<u>Randy Fraser</u>	<u>CEMVS-ED-P</u>	<u></u>
<u>Pam Reed</u>	<u>CEMVS-ED-P</u>	<u></u>
_____	_____	_____
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**APPENDIX M**  
**REPORT DISTRIBUTION LIST**

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**APPENDIX M – REPORT DISTRIBUTION LIST**

<b>Addressee Copies</b>	<b>No. of</b>
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