

Technical Memorandum

To: Gabriel Moreno-Fergusson, CSSA

From: Parsons

CC: Environmental Encyclopedia, DMS

Date: September 10, 2012

Re: AOC-51 Ordnance Investigation

Summary

This technical memorandum documents the unexploded ordnance (UXO) investigation at Area of Concern 51 (AOC-51). The goal of the investigation was to help refine the boundary of AOC-51 by identifying potential locations of soil contamination and/or buried debris within the historically identified boundary of AOC-51 (**Figure 1**).

Background

AOC-51 is located in the southeast corner of Camp Stanley Storage Activity (CSSA), in the East Pasture. The site boundary originally covered approximately 72 acres. Although there are no records of waste management occurring within AOC-51 and historical aerial photograph review does not suggest waste management occurred in a specific area within AOC-51 (**Figure 2**), numerous ordnance items have been identified in this area in the past. In addition, previous surface soil sampling efforts identified the presence of munitions constituents (MC) contamination in the area. Historical documents and physical evidence indicate that the area was used during World War I for military trench warfare and other training activities. According to the document *Camp Bullis: A History of the Leon Springs Military Reservation 1890-1990*, the “zig-zag” trenches situated along the western side of the site were used for the filming of the 1926 movie “Wings” as well as subsequent use for “Trench War-fare” training. Additional background information on AOC-51 can be found in the CSSA Environmental Encyclopedia, Volume 3-2.

Additionally, 91 sample locations were analyzed by x-ray fluorescence (XRF) during the UXO Investigation (**Figure 3**). The XRF results were investigated further during the remediation effort at AOC-51, and details are included in the Release Investigation Report (July 2012) located in Volume 3-2 of the CSSA Environmental Encyclopedia).

Investigation Procedures

The investigation, conducted in November and December 2011, consisted of performing meandering path Qualitative Reconnaissance (QR) within the southeastern corner of the east pasture area to help delineate the boundary of AOC-51. The field team used global positioning system (GPS) equipment to record the QR path and the additional information as follows:

- Density Estimation Points: Estimates number of anomalies present including a visual assessment of surficial debris and a Schonstedt-aided (GA-52Cx) assessment of the

presence of subsurface anomalies. Estimations were conducted for every 100 feet with classifications of low (0 – 10 items/detections), medium (11-25), and high (greater than 26);

- Munitions Debris (MD) Observation Points: Observation of unique or particular MD;
- Observation Points: Observation of range-related information of interest;
- Types of MD encountered and any Munitions and Explosives of Concern (MEC) found; and
- Photographs of landmarks and points of interest.

Investigation Results and Discussion

Estimated Density of Surface and Subsurface Debris

Approximately ten miles of QR were conducted at AOC-51. A total of 247 Density Estimation Points were recorded along the QR path (**Figure 4**). A low density (between 1 and 10 detections) was estimated for the majority of the site with a few medium densities (between 11 and 25 detections) and 1 high density (26 or greater detections) (Figure 4). The medium density areas are located mainly in the fighting trenches and around the faux buildings. The high density area was an area that seemed to be used as a bivwack area. This assumption is based on the observations of the area being a level open area, enclosed by trees with metallic debris consisting of expended small arms cartridge casings, C-Rations cans, and related debris.

Munitions Debris Observation Points

A total of 144 MD Observation Points were recorded to document specific individual munitions items. The MD consisted of fragments from the following:

- 37mm, Low Explosive (LE)
- 37mm, Armor Piercing (AP)
- 3-inch, High Explosive (HE) and Practice Trench Mortar (Stokes Mortar)
- 4-inch HE Trench Mortar (Stokes Mortar)
- 3-inch, HE, White Phosphorus and Shrapnel
- Powder Train Time Fuzes, M1907
- 81mm mortar fragments and tailbooms;
- Bouchon Type grenade fuzes
- projectile fuze, M51
- ballast weight for the 2.36 inch practice rocket

These types of MD and small arms debris suggest that this area was used for troop training and as a target area for some field artillery training.

Additional Observation Points and Other Features of Interest

Three presumed UXO items were encountered at two locations during the investigation including a shell, 3-inch HE trench mortar, MK1, and two smoke projectiles of unknown origin. Their locations are noted on Figure 4 and photos of the items are included in the attached Investigation Database.

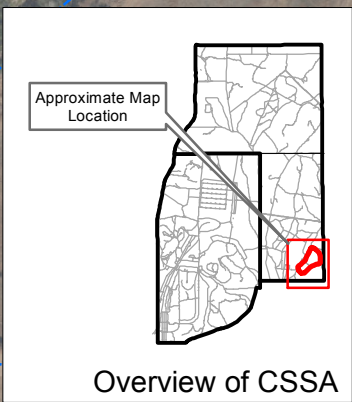
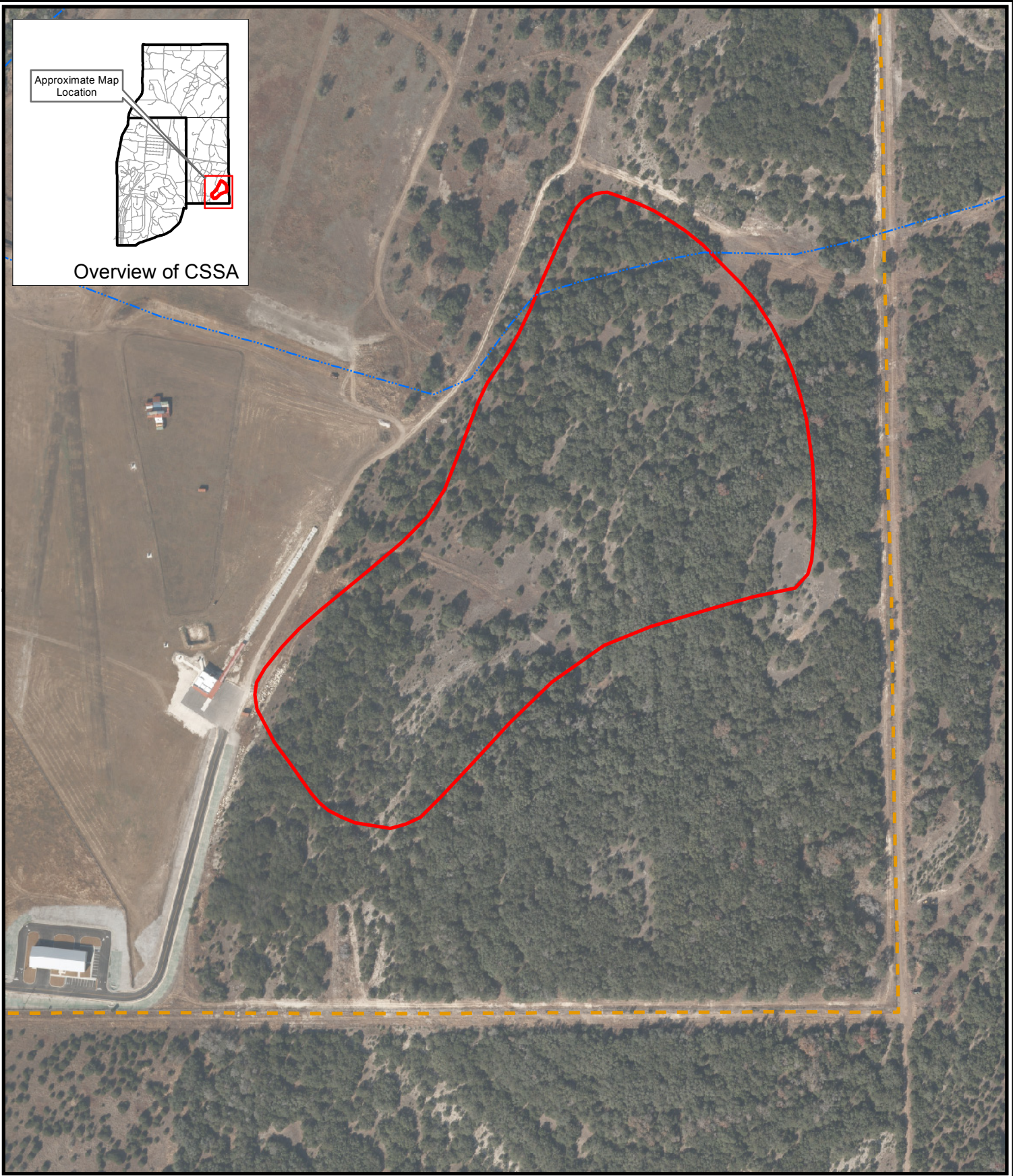
A number of landmarks, some of which are identified on Figure 4, were also encountered during the investigation including faux buildings; possible campsites; fighting positions, and zig-zag fighting trenches. Photos of these landmarks are included in Attachment 1.

Conclusions

No indications of waste management activities or disposal trenches/areas were encountered. The landmarks identified during the investigation, including the possible campsites; fighting positions, and zig-zag fighting trenches all confirm the use of the area during World War I for military trench warfare and other training activities. In addition, the existence of the faux buildings in the northern portion of AOC-51 suggest that training also took place to train soldiers on combat in urban environments. The existence of scattered small arms projectiles could be indicative of this hillside being the backstop behind a small arms range and later a target area for Field Artillery firing as indicated in the document *Camp Bullis: A History of the Leon Springs Military Reservation 1890-1990*.

Enclosures: Figures and Investigation Database

FIGURES



Aerial Photo Date: 2010






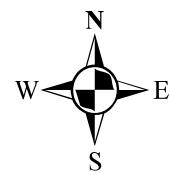
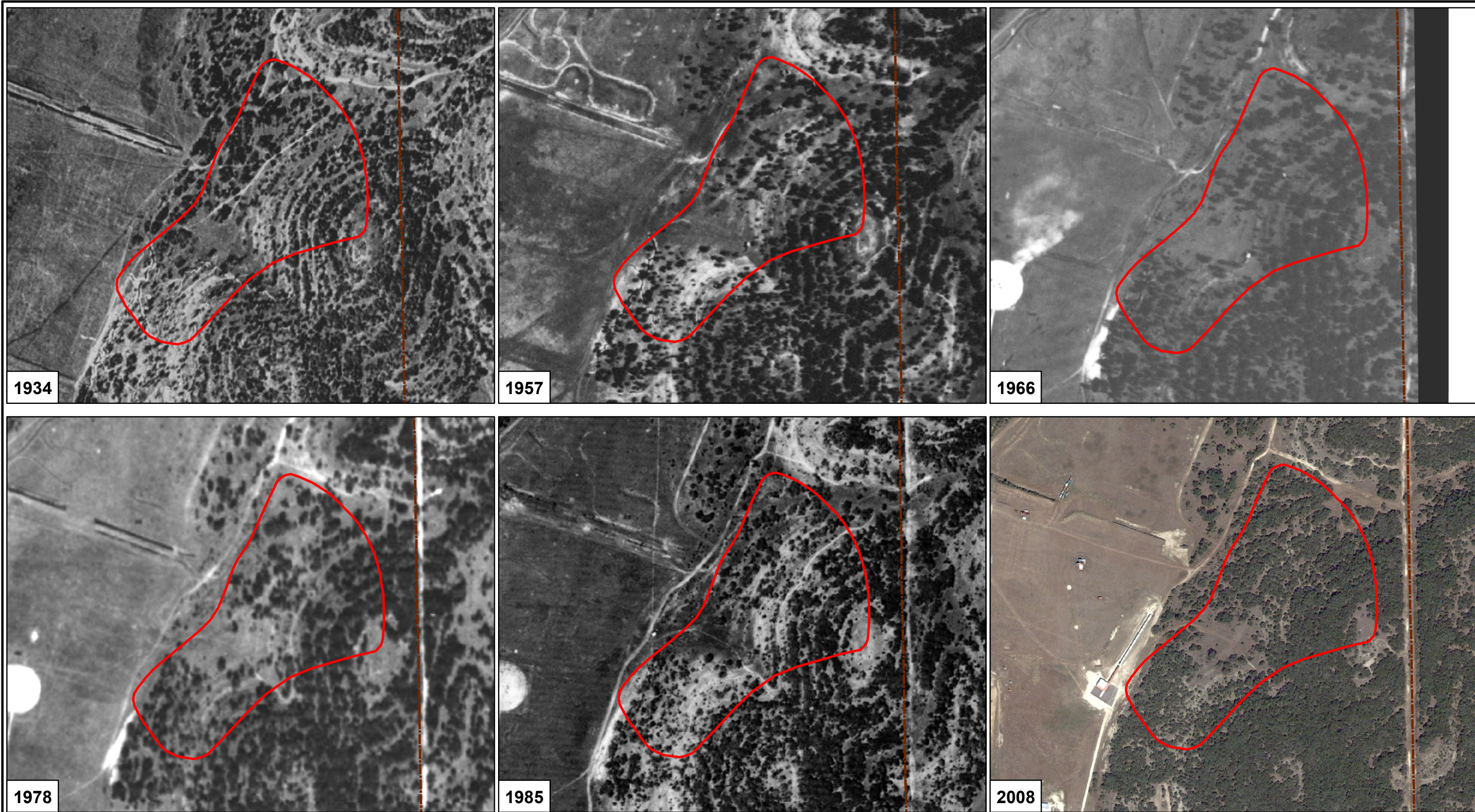
-  Intermittent Stream
-  CSSA Outer Fence Line
-  AOC-51 Boundary

Figure 1

AOC-51 Boundary

Camp Stanley Storage Activity

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0 250 500 1,000 Feet

Legend



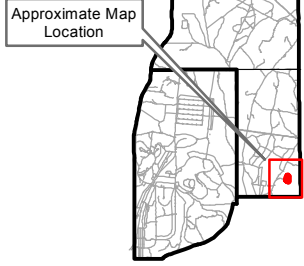
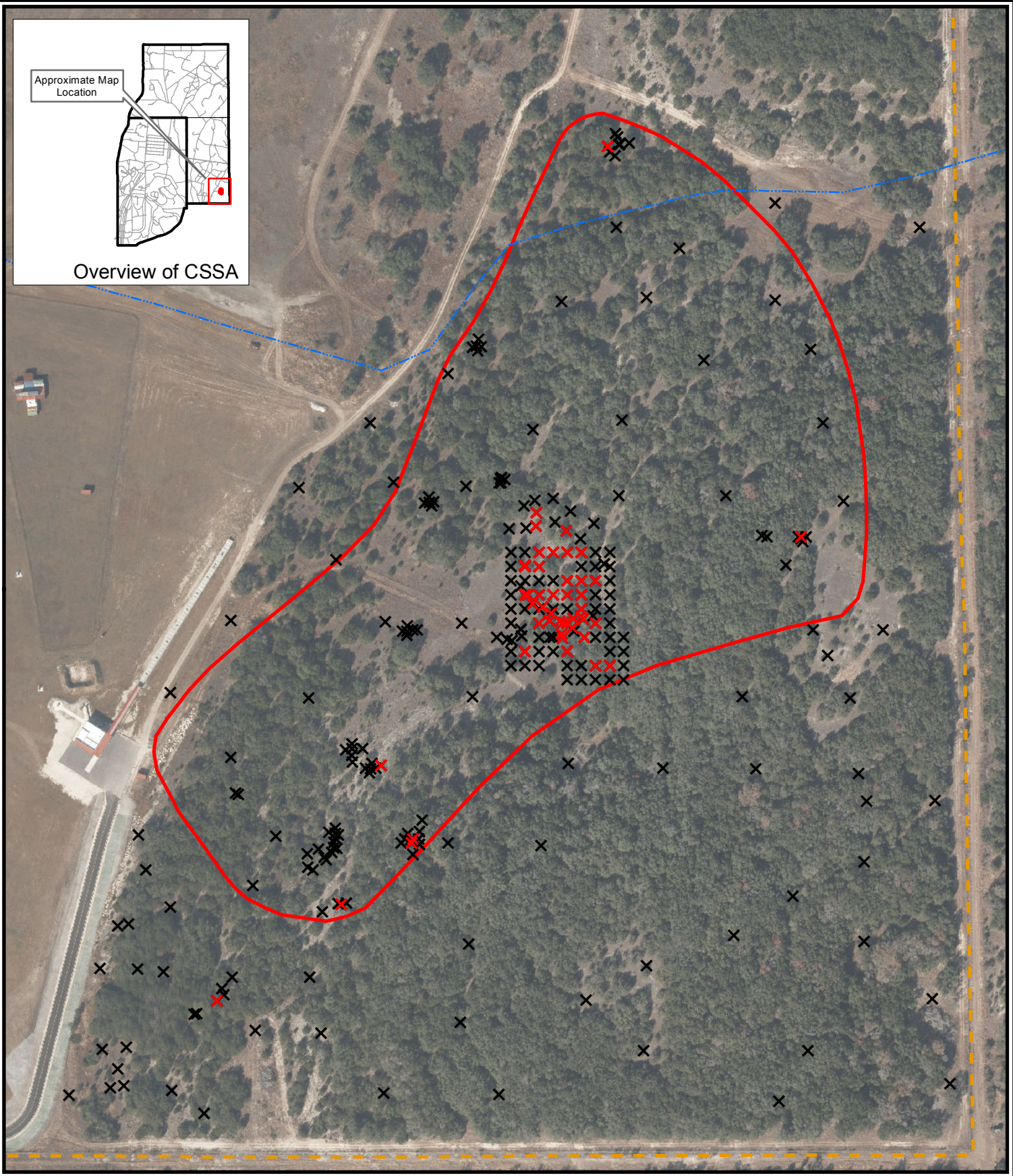
-  Fence Line
-  AOC-51 Boundary

Figure 2

AOC-51
Historical Aerial Photos
Camp Stanley Storage Activity

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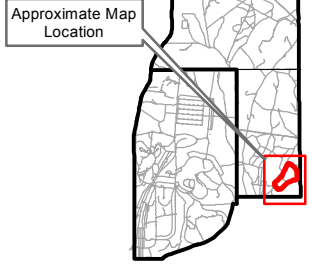
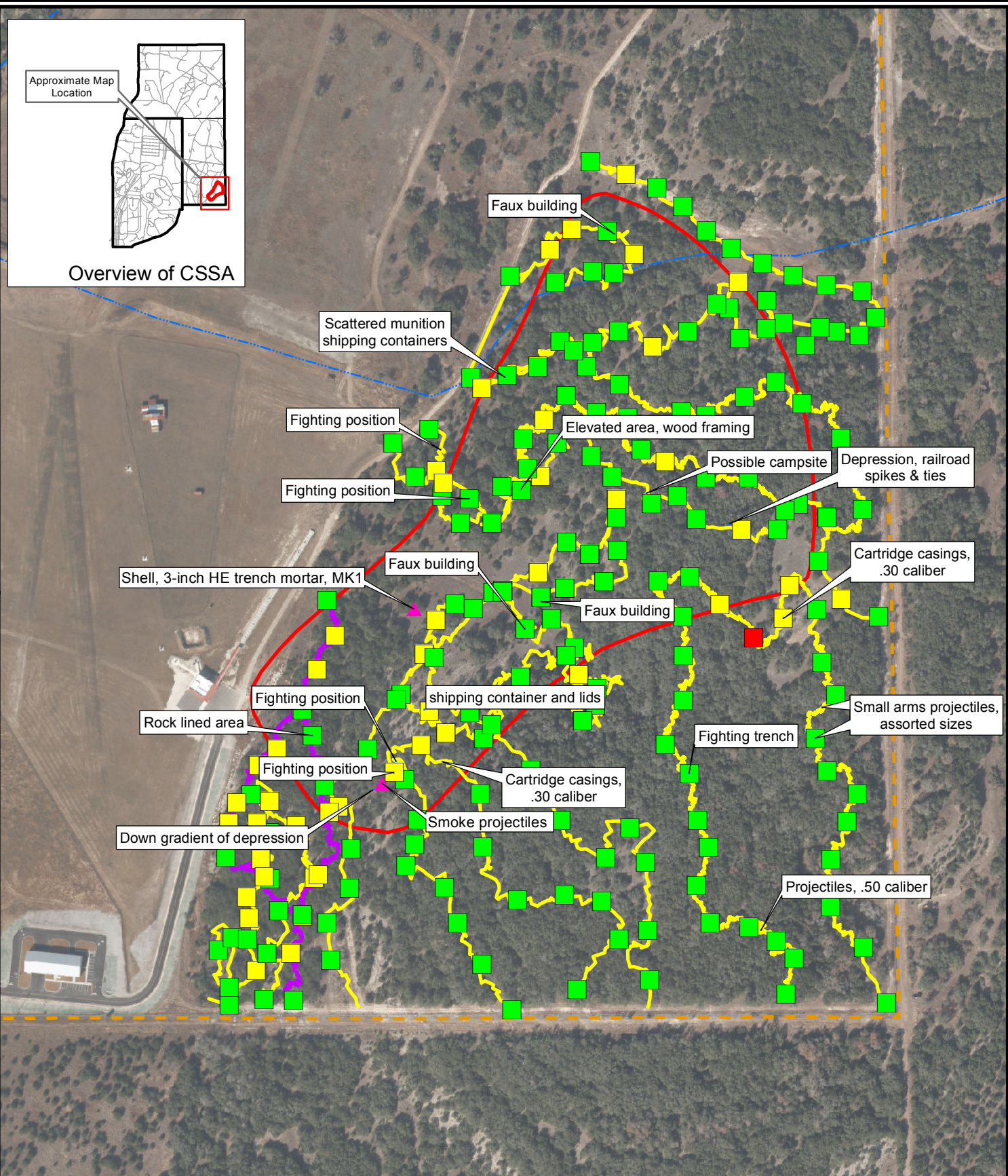
Overview of CSSA

Aerial Photo Date: 2010



- x XRF Location with Pb or Zn result above Tier 1 PCL (mg/kg)
- x XRF Location
- Intermittent Stream
- CSSA Outer Fence Line
- AOC-51 Boundary

Figure 3
AOC-51
XRF Survey
Camp Stanley Storage Activity
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Overview of CSSA

Aerial Photo Date: 2010



- AOC-51 Boundary
- CSSA Outer Fence Line
- ~ Intermittent Stream
- ▲ UXO Finding
- Density Debris**
- Low (1-10)
- Medium (11-25)
- High (26 or greater)
- Meandering Path
- Zig-Zag Trench, explored

Figure 4

AOC-51 Qualitative
Reconnaissance Investigation Results
Camp Stanley Storage Activity

