



From: InDepth Corporation

To: San Diego Gas & Electric (SDG&E)

Subject: Unexploded Ordnance (UXO) Support for SDG&E's Sycamore-to-Peñasquitos 230 kV Transmission Line Project

1. **Purpose.** To perform surface visual surveys on select project footprints in the vicinity of the Sycamore Substation
2. **Personnel.** Armando Lucero (Senior UXO Supervisor [SUXOS]), Chris Riley (UXO Technician III), Nicki Houlihan (UXO Technician II).
3. **Location.** Sycamore Substation
4. **Dates.** January 18 – January 20, 2017.
5. **Key personnel contacted.** Jeffrey Clemmons (SDG&E Field Safety Advisor), Jennifer Kaminsky (SDG&E Environmental Project Manager), Edith Moreno (SDG&E Environmental Compliance Lead)
6. **Discussion.** InDepth was tasked to provide UXO support for the Sycamore-Peñasquitos 230 kV Transmission Line Project (Project) due to a portion of the Project's footprint located within the boundary of the historical Former Camp Elliott where the Department of the Navy conducted live munitions training prior to and during World War II. In order to select the most appropriate level of support that will ensure the safety of SDG&E and subcontractor personnel, a review of the U.S. Army Corps of Engineers (USACE) Formerly Used Defense Sites (FUDS) previous munitions studies and investigations was conducted. Information was obtained from the following documents:
  - General Services Administration (GSA) Historical Overview Marine Corps Air Station Miramar, San Diego, California, January 2004
  - U.S. Army Corps of Engineers (USACE) Archive Search Report (ASR) Camp Elliott, San Diego, California, September 2004
  - USACE Final Engineering Evaluation and Cost Analysis (EE/CA) Report for Areas D, G, and H Former Camp Elliott, San Diego, California, May 2006
  - USACE Final Abbreviated Feasibility Study for Areas D, G, and H Former Camp Elliott, San Diego, California, January 2007

**UXO History.** The U.S. Military has been conducting munitions training in the vicinity of the Sycamore Substation since 1917 when the country entered World War I. Camp Kearny was in operation from 1917 – 1920 and was the training site of the 40th Infantry division's artillery, infantry, and cavalry brigades (GSA 2004). Military training resumed in the area in 1934 when the U.S. Marine Corps obtained a lease for over 19,000 acres and established Camp Holcomb for the training of artillery, anti-aircraft, and machine gun crews. With the outbreak of World War II, the camp was renamed Camp Elliott and the Navy designated it as a Marine Corps Training Center. With the assignment of the Second Marine Division in 1941, Camp Elliott's land area expanded to 32,000 acres and consisted of encampments, bivouac areas, and 41 firing ranges. The types of weapons and artillery used on the training ranges were rifles, automatic rifles, .30 caliber ground machine guns, .22, .30 and .50 caliber Anti-Aircraft machine guns, .50 caliber and 37mm Anti-Tank guns, 60mm and 81mm mortars, 4.2-inch chemical mortars, 75mm pack howitzers, and 75mm guns. In just over a year, the Marines were



able to train and mobilize more than 50,000 officers and soldiers to support combat operations in the Pacific combat zones. In 1942, the Marines began transferring their live fire training to the newly established Camp Pendleton and terminated training at Camp Elliott in October of 1944. (USACE 2004).

According to the USACE ASR (2004), there are four sites that were identified on historical maps that were known to be adjacent to or overlapped the portion of the Project that is within the MCAS Miramar boundary. These areas were identified as being used for infantry machine gun / artillery training, aircraft practice bombing training, and an area used for bomb disposal (see Figure 1). These areas were designated as:

- Range B - .22 caliber anti-aircraft machine gun practice range
- Range G – 60mm and 81mm mortars and .45 and .30 calibers training range
- Bomb Disposal Range – no detailed information available for this area. These types of ranges are typically used by Explosive Ordnance Disposal (EOD) teams to dispose (by detonation) unexploded ordnance.
- Bombing Target #31 – aircraft bombing practice for 3-lb miniature practice bombs, 100-lb and 500-lb sand/water filled practice bombs (with explosive spotting charges).

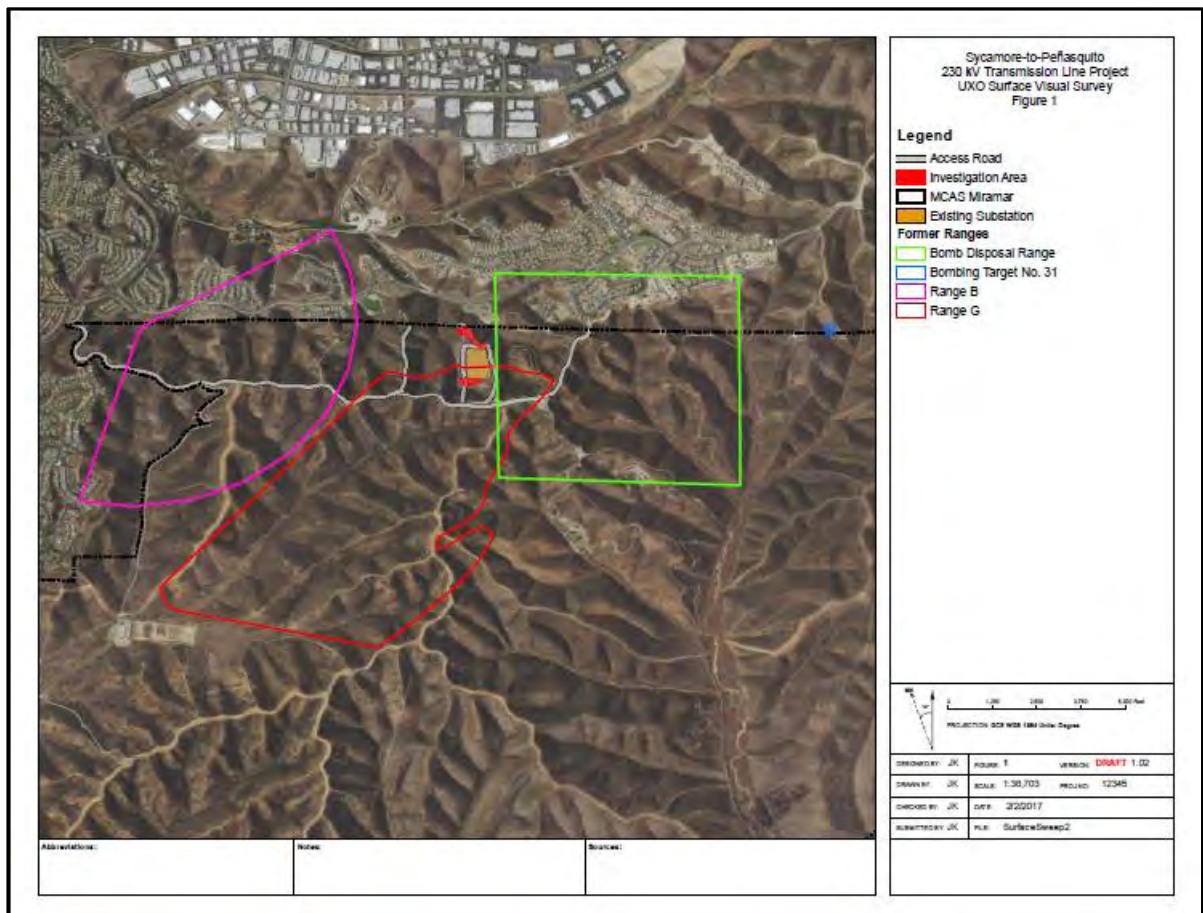


Figure 1 Historical Munitions Usage Areas



**Previous Investigations/Assessments** - A USACE team conducted a site survey in August 1991 and stated the following about their observations for Range B, Range G, and the Bomb Disposal Range: “Ordnance contamination is unlikely in these areas since this property was not in the line of estimated firing positions and does not include known former impact areas. No strays have been found to date”. The USACE team based their observations on differences they encountered on two versions of the historical maps they researched. The training range locations identified on an August 1941 map were not included on the October 1941 version. This could have resulted from changes in the Navy’s plans which resulted in the ranges not being built nor used. The report went on to state that precautions must still be taken due to the fact that Camp Elliott was a training center and the records kept during those years were not always an accurate account of the actual training that was being conducted (USACE 2004).

The closest historical range where evidence of munitions usage was observed is Bombing Target #31 which is approximately 1.5 miles east of the project site. The following observations were made by the USACE assessment team during a site visit conducted February 1996; “Among other OE [ordnance and explosives] related items, they found hundreds of 3, 100, and 500-pound practice bombs and 2.25-inch practice rockets in the vicinity of the East Miramar Bomb Target, which was located just east of a bomb disposal area (USACE 2004).

**Surface Visual Survey** – Due to the historical information available on the types of munitions that could have been used in the vicinity of the Sycamore Substation, the objectives for the UXO Team was to perform a surface visual survey (SVS) of the Project footprint. The SVS was performed by a two-person UXO team using a backpack mapping-grade GPS (Trimble Model Pro XRT) and Schonstedt GA-52 hand-held magnetometers. The GPS had maps of the Project footprint as well as the planned underground trench lines and proposed structures. The UXO Team used these maps to keep close spacing between the team members to ensure total coverage of area was accomplished. One UXO technician equipped with the backpack GPS served as the guide to ensure there were no gaps in coverage. The second team member was positioned approximately 10-feet behind and to the right or left (depending on the area). This approach was used to perform the SVS over the entire project footprint to ensure coverage of all accessible area.

Figures 2A through 2E below include the Project footprints that were surveyed, the GPS tracks of the UXO team, and the locations of the corresponding photographs of each of the areas surveyed.

- Temporary Underground Trench Work Area (Photos 1, 2, 3, 4)** - The underground trench lines run parallel along the gravel road from the northeast corner of the substation up to the top of the hill ending at the site of the two new structure locations. Most of the trench line is located along the road footprint with some sections located just off the right and left sides of the road as it curves up to the top of the hill.

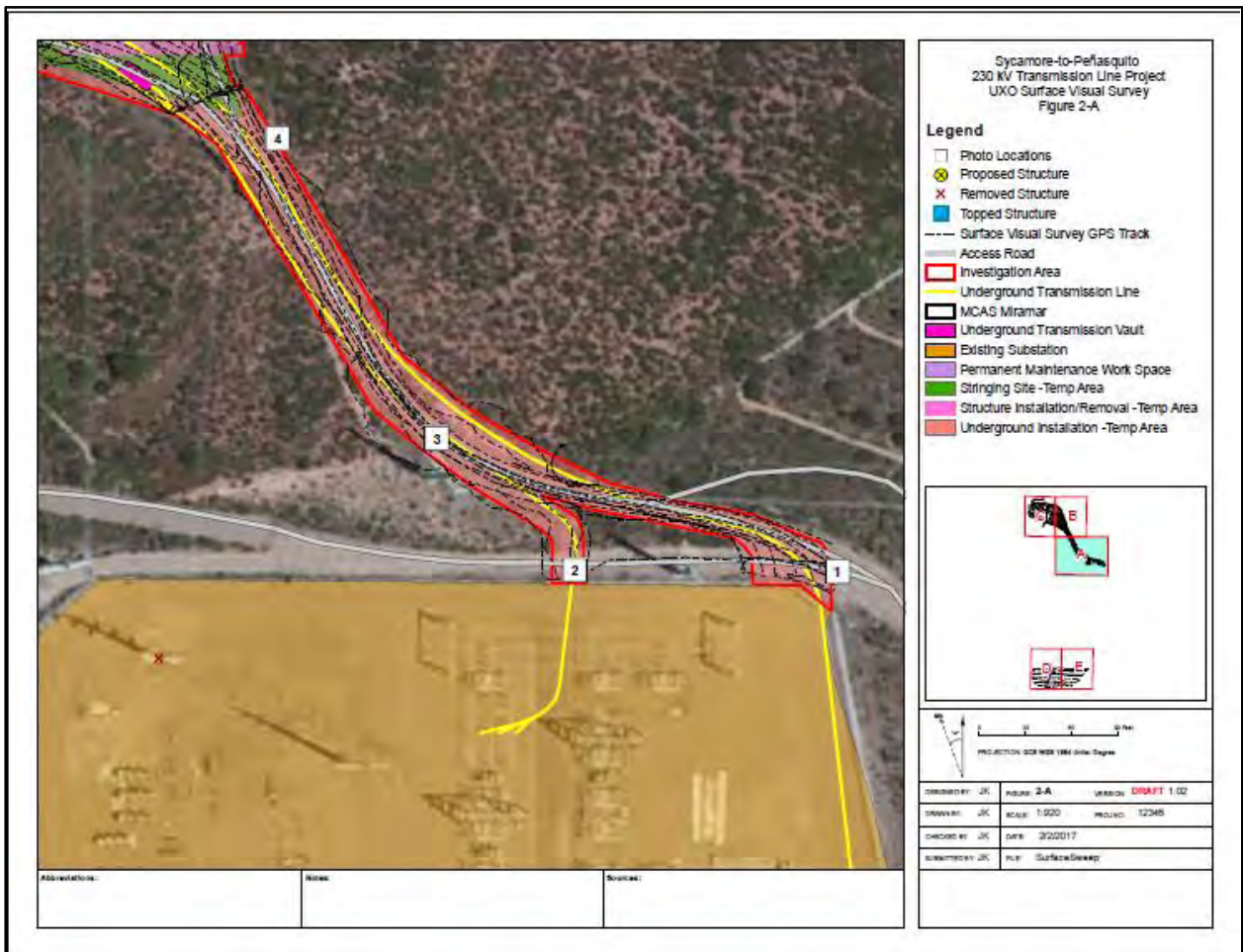


Figure 2-A Underground Transmission Line Footprint



Photo 1 - Facing North



Photo 2 – Facing North



Photo 3 - Facing Northwest



Photo 4 - Facing Northwest



- **Stringing Site** (Photos 4 and 6 on next figure) - Located primarily at the top of the hill and along the access roads. Most of this area is clear from vegetation.

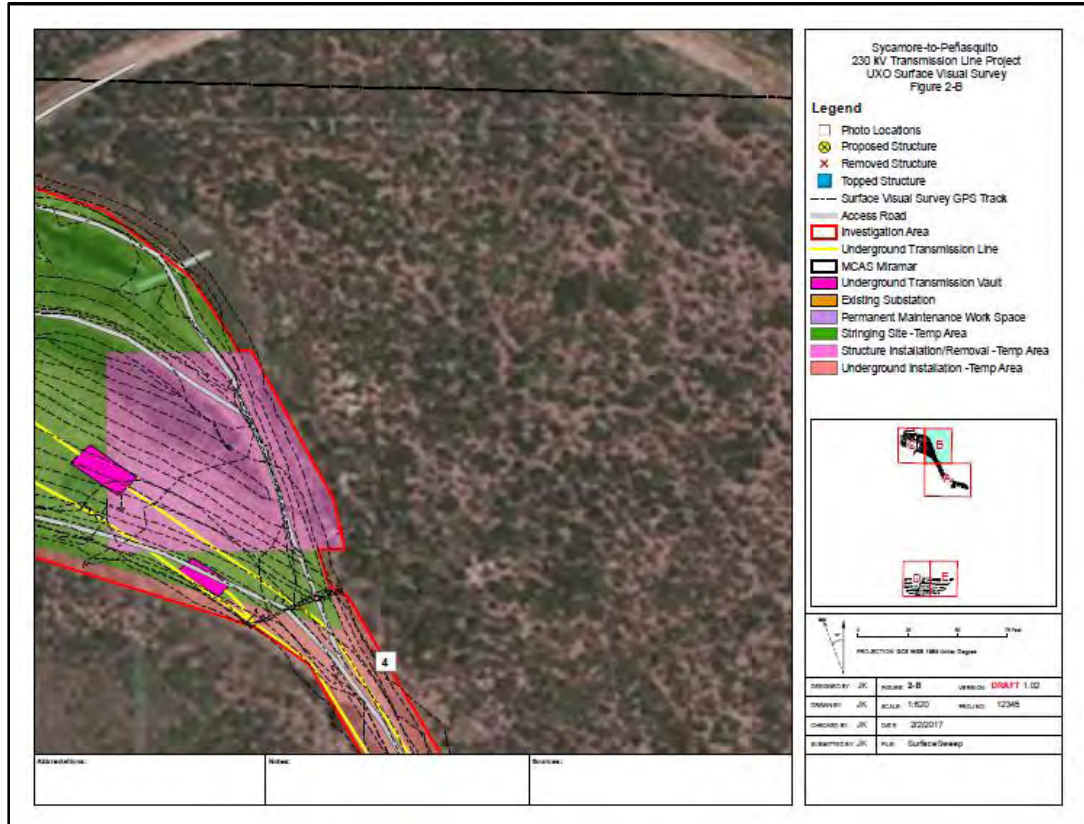


Figure 2-B Stringing Site Footprint



Photo 4- Facing Northwest

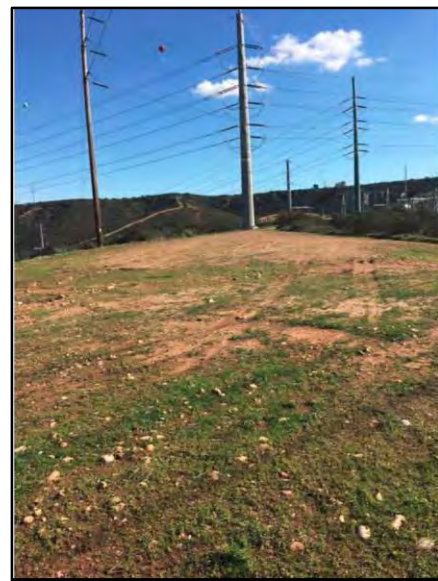


Photo 6 - Facing Southeast

- **Permanent Work Area (Photos 5 and 10)** - Located primarily at the top of the hill and along the access roads. There are various levels used as access roads for this area.
- **Proposed Structures (Photos 7, 8, 9)** - Located at the top of the hill at the end of the underground trench lines on the western side of the work area. Area is covered in heavy vegetation and lays on a slope.

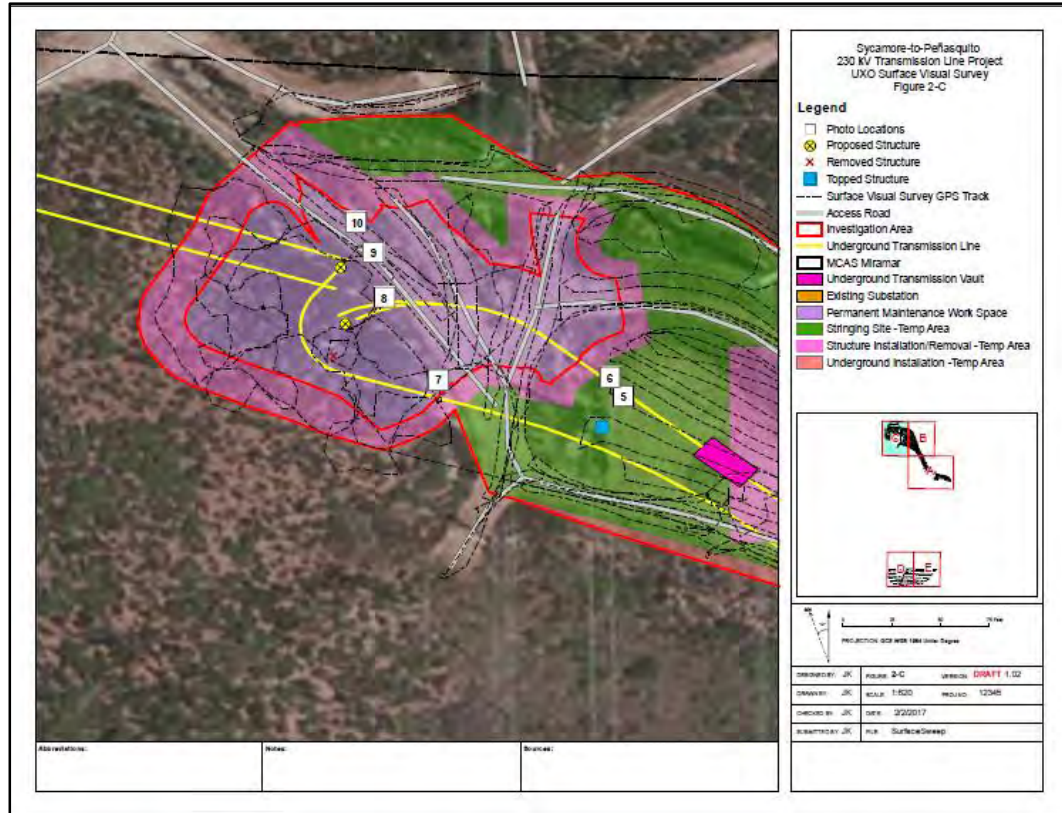


Figure 2-C Permanent Work Area and Proposed Structures Footprint

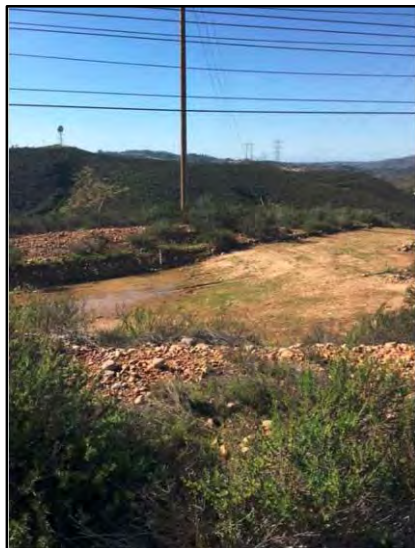


Photo 5 - Facing West



Photo 10 - Facing East



Photo 7 - Facing West



Photo 8 - Facing South



Photo 9 - Facing South





- **Structure Installation / Removal Temporary Area (11,12, and 13) -** Located along the southern boundary of the substation. This area is relatively flat and wide open.

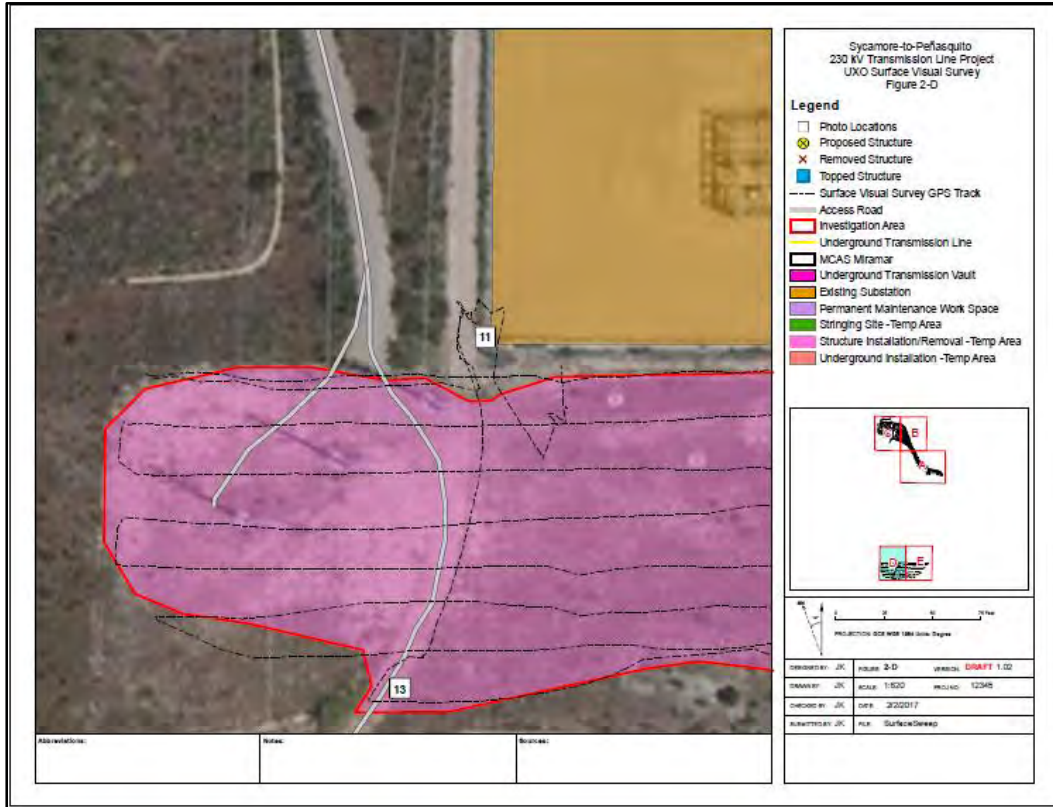


Figure 2-D Structure Installation / Removal Temporary Area Footprint



Photo 11- Facing South



Photo 13 – Facing North

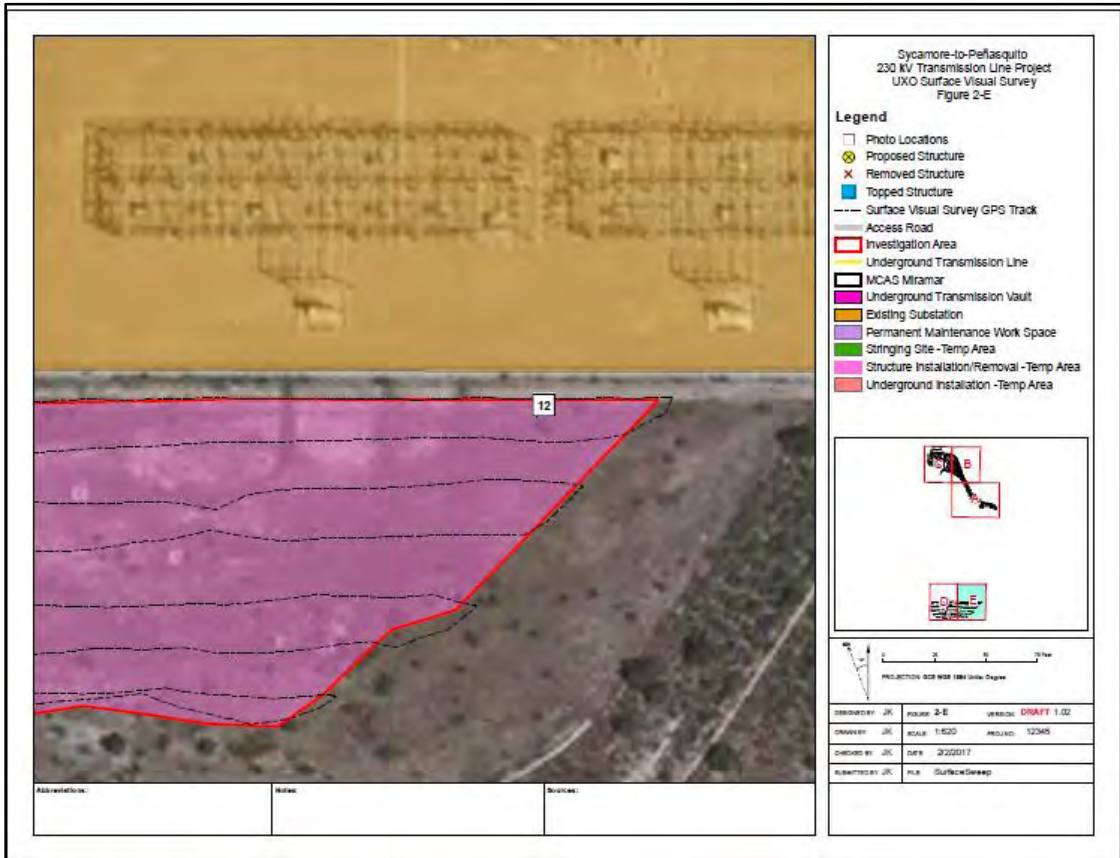


Figure 2-E Structure Installation / Removal Temporary Area Footprint continued



Photo 12 – Facing East



7. **Observations.** No unexploded ordnance (UXO), munitions debris, or explosive residue was encountered on the surface of any of the areas the UXO Team performed the SVS. The team used the hand-held magnetometers in the vegetation areas. The UXO team encountered assorted non-munitions debris (nuts, small bolts, nails, assorted metal pieces etc.) throughout the areas that is consistent with access roads and maintenance easements. As these were encountered, the UXO team members would move the metal debris and recheck the spot with the hand-held magnetometer. There were several instances where the anomalies were too deep to investigate without the use of a shovel. Since intrusive investigation was not part of the scope of work, the sources of the subsurface anomalies could not be determined. The munitions that were used during the Camp Elliott era were not designed to penetrate below the surface. They were designed to function via air burst (at specific altitudes for a wider dispersal of fragmentation), or upon ground impact so the probability of subsurface UXO is low. However, there is a potential for subsurface UXO or munitions debris with explosive residue if the munitions did not function as designed.
8. **Recommendations.** Due to the historical munitions usage in the area and the lack of accurate historical records, any future ground disturbance should include the use of UXO construction support to provide UXO safety oversight. If the Project footprint requires a larger area, additional surface visual surveys should be accomplished.
9. If you require additional information, please contact me via email at [alucero@indepthcorporation.com](mailto:alucero@indepthcorporation.com) or on my cellular phone at (858) 472-5202.

Respectfully,

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