



**US Army Corps
of Engineers**
Rock Island District



Defense Environmental Restoration Program
for
Formerly Used Defense Sites
Ordnance and Explosives

Archives Search Report

FINDINGS

for
the former

**STANISLAUS BOMBING TARGET
STANISLAUS COUNTY, CALIFORNIA
PROJECT NUMBER JO9CA107401**

JULY 2002



DRAFT

DEFENSE ENVIRONMENTAL RESTORATION PROGRAM
For
FORMERLY USED DEFENSE SITE

FINDINGS

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ARCHIVES SEARCH REPORT
FOR
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JULY 2002

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ORDNANCE AND EXPLOSIVES
 ARCHIVES SEARCH REPORT
 FOR
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ORDNANCE AND EXPLOSIVES
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FINDINGS

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ORDNANCE AND EXPLOSIVES
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1. INTRODUCTION

a. **Subject and Purpose**

(1) This report presents the findings of a historical record search and site inspection for the presence of ordnance and explosives (OE) located at the Former Stanislaus Bomb Target (BT), Stanislaus County, California (see plate 1). This investigation was performed under the authority of the Defense Environmental Restoration Program for Formerly Used Defense Sites (DERP-FUDS).

(2) The former site is associated with Naval Auxiliary Air Station (NAAS) Crows Landing and is located west of US Interstate 5 approximately 3.5 miles northwest of the air station. The site was also known as Crows Landing Target No. 7 and Target No. 9. The investigation focused on the original 640 acres plus 71 acres that were added as a safety buffer zone for a total of 711 acres.

(3) The purpose of this investigation was to characterize the site for potential OE presence, to include conventional ammunition and chemical warfare materiel (CWM). Experienced ordnance experts conducted the investigation through a thorough evaluation of historical records, interviews, and on-site visual inspection.

b. **Scope**

(1) This report presents the site history, site description, real estate ownership information, and confirmed ordnance presence (prior to and after site closure), based on available records, interviews, site inspections, and analyses. The analysis provides a complete evaluation of all information to assess current day potential ordnance presence where actual ordnance presence has not been confirmed.

(2) For the purposes of this report, OE presence consists of live ammunition, live ammunition components, CWM, or explosives, which have been lost, abandoned, discarded, buried, fired, or thrown from demolition pits, or burning pads. These items were either manufactured, purchased, stored, used, and/or disposed of by the War Department/Department of Defense (WD/DOD). Such ammunition/components are no longer under accountable record control of any DOD organization or activity.

(3) **Expended** small arms ammunition (.50 cal or smaller) is **not** considered as OE. Ordnance and explosives further includes "explosive soil" which refers to any mixture in soil, sands, clays, etc., such that the mixture itself is explosive. Generally, 10 percent or more by weight of secondary explosives in a soil mixture is considered explosive soil.

2. PREVIOUS INVESTIGATIONS

a. **1999 Preliminary Assessment of Eligibility**

The US Army Corps of Engineers, Sacramento District, contracted with Tech Law, Lakewood, Colorado, to conduct a DERP-FUDS Inventory Project Report (INPR) for the former Stanislaus Bombing Target, Project Number JO9CA107400. The Findings and Determination of Eligibility (FDE), dated 21 September 1999, recommended further investigation of this site for an OE presence due to the former military usage of the site. Any OE presence could constitute a public safety hazard. Table 2-1 represents an overview of the Preliminary Assessment of Eligibility (see document E-1).

TABLE 2-1 DERP-FUDS PRELIMINARY ASSESSMENT PROJECTS				
Project Number	DERP Category	Present Phase	Comments	Location
JO9CA107401	OE	SI	Potential Ordnance or Explosive Presence	(Entire Site) 640
	HTRW	--	None Recommended	
	BD/DR	N/A	None Recommended	

b. **Other Investigations**

No other investigations of this site were uncovered during this archive report.

3. SITE DESCRIPTION

a. **Existing Land Usage**

(1) The property is and has been owned by the Stanley Cox Family of Patterson, California since the early 1900's. Mr. Cox uses the land for cattle grazing as it is too hilly and arid for farming.

(2) To facilitate a description of the former Stanislaus BT, Table 3-1 helps to summarize the various project areas and the former and current usage for the former site.

TABLE 3-1 FORMER/CURRENT LAND OWNERS/USAGE					
AREA	FORMER USAGE	CURRENT OWNER	CURRENT LAND USAGE	ACREAGE*	COMMENTS
A	Bomb Target	Stanley Cox	Cattle Grazing	13	See Plate 3
B	Bomb Target	Stanley Cox	Cattle Grazing	13	See Plate 3
C	Vehicle Target	Stanley Cox	Cattle Grazing	18	See Plate 3
D	Vehicle Target	Stanley Cox	Cattle Grazing	13	See Plate 3
E	Suspected Burial Site	Stanley Cox	Cattle Grazing	3	See Plate 3
F	Safety Buffer Zone	Stanley Cox	Cattle Grazing	**253	See Plate 3
G	Remaining Lands	Stanley Cox	Cattle Grazing	**398	See Plate 3
*Approximate Acreage			Total Acreage:	711	
**Includes additional lands					

b. **Climatic Data**

(1) The climate of Western Stanislaus County is characterized by hot, dry summers and cool, moist winters. The Coast Range moderates the effects of the moisture-laden

weather systems from the Pacific Ocean. Summers were hot and dry because a persistent high-pressure area offshore keeps most weather systems from entering the area. A southward shift of the high-pressure area in winter allows weather systems to enter the area, producing cool, moist weather and frequent fogs.

(2) Thunderstorm days, relative humidity, percent sunshine, and wind information are estimated from First Order stations Fresno and Stockton, California.

(3) Climate Tables were created from climate stations Newman (elevation 90 feet). Table 1 (document E-4) gives data on temperature and precipitation for the survey area as recorded at Newman in the period 1961 to 1990. Daily extremes were extracted from the full period of record for each station. Table 2 (document E-5) shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 (document E-5) provides data on the length of the growing season.

(4) At Newman, in winter, the average temperature is 47.0 degrees F and the average daily minimum temperature is 36.7 degrees. The lowest temperature on record, which occurred at Newman on December 23, 1990, is 15 degrees. In summer, the average temperature is 75.7 degrees and the average daily maximum temperature is 94.1 degrees. The highest temperature, which occurred at Newman on July 3, 1950, is 115 degrees.

(5) At Newman, the total annual precipitation is about 10.53 inches. Of this, about 1.90 inches, or 18 percent, usually falls in April through October. The growing season for most crops falls within this period. The heaviest 1-day rainfall during the period of record was 4.10 inches at Newman on January 17, 1988. Thunderstorms occur on about 4 days each year, and can occur in any month. No significant snowfall has been recorded in lower elevations of West Stanislaus County

(6) The average relative humidity in mid-afternoon is about 43 percent. Humidity is higher at night, and the average at dawn is about 78 percent. The sun shines 92 percent of the time in summer and 50 percent in winter. The prevailing wind is from the west-northwest. Average wind speed is highest, 9.0 miles per hour, in June.

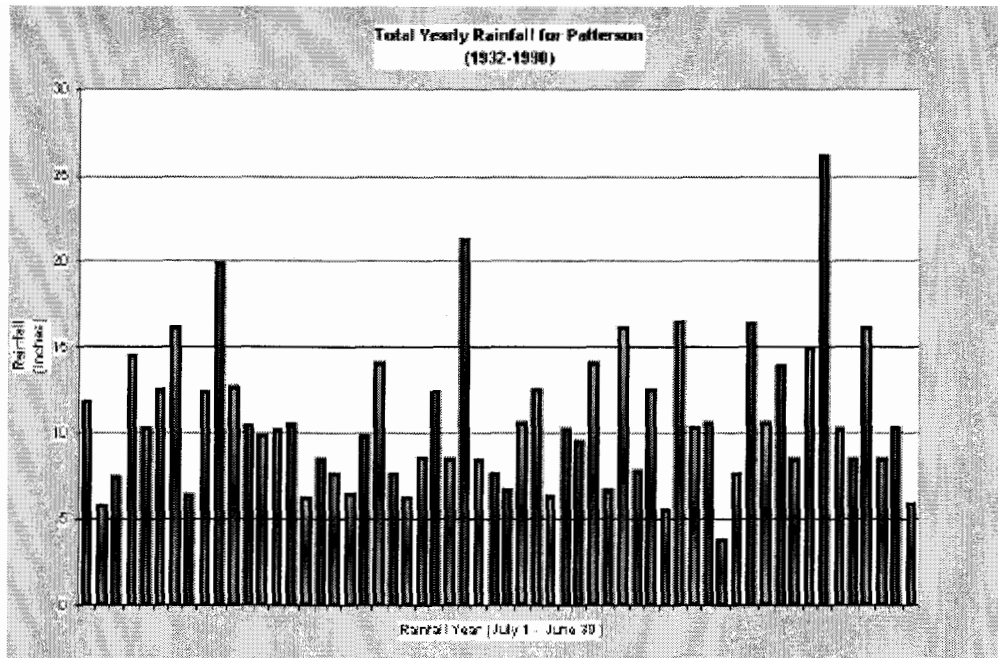


Figure 1. - Over 50 years of total rainfall collected in Patterson. The high rainfall years are responsible for the soil forming factors in the area.

(7) Figure 1, Rainfall Data for Patterson, CA, is an accumulation of rainfall information since 1932. Even though the average precipitation is about 10 inches, notice the increase in the highest rainfall years. These years also correspond to the flooding events in the valley areas.

c. **Topography**

(1) The site is basically bounded by US Interstate 5 to the east, Oak Flat Road along the southern portion and high power lines on the west side (see plate 1).

(2) The topography from a gated entry off Oak Flat Road is one of high rolling hills split by a dirt road that travels north for 4,635 feet. The roadway rises from 345 feet at the gate to 420 feet at its end with the hills rising to 650 feet on either side (see plate 2).

(3) During the rainy season the hills are green with new vegetation and the ground is very soft. From the end of May through November, the oats mature into a shimmering and arid sea of gold. The earth surface becomes dry and very hard. The flies become a real nuisances when the fields dry up.

(4) Native vegetation occurs principally in the hills and mountains of the western part of the area. In general there was a zone of grassland just above the valley floor and on the low rolling foothills of the Diablo Range. Farther west and on the higher and steeper slopes the grassland gives way to woodland-grass or brush associations (reference B-10)

d. **Geology and Soils**

(1) The geology and soil types of the former target sites are illustrated in figure 2.

(2) Table 3-2 on the next page summaries the site specific soil classifications and are extracted from documents L-1 through L-5.

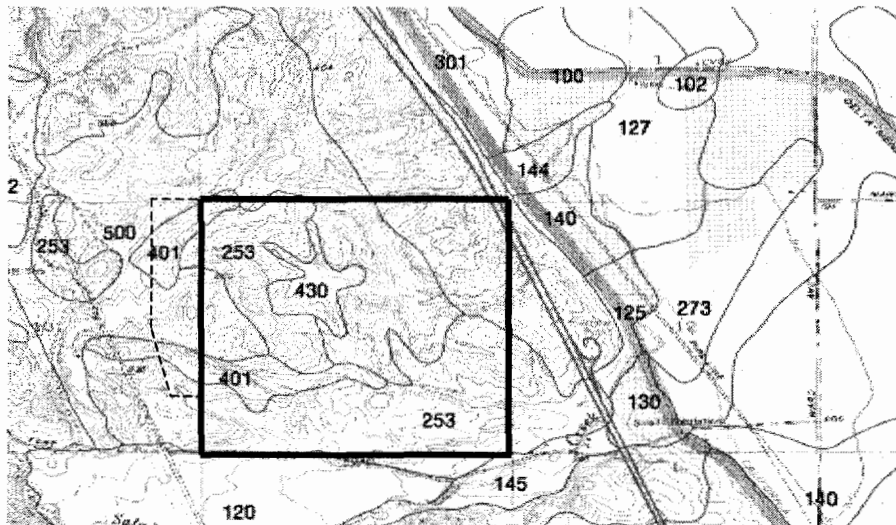


Figure 2: Site specific soil classification

(3) A major soil type on the former site is *Chaqua-Arburua* (in figure 2 as map symbol 253) complex 8 to 15 percent slopes. The characteristic landform for *Chaqua* soil is classified as uplifted dissected terraces, while *Arburua* represents foothills with elevation of 400 to 1,200 feet. In general the area is well drained with annual grasses and forbs covering the rolling hills. This soil is well drained and is in the deep to very deep depth class. The surface runoff is rated as medium to very high and its available water capacity is moderate to high. There is no flood hazard and the erosion rate in bare areas is listed as moderate. The bedrock is 40 to 60 inches below the surface with a water table greater than 6 feet.

(4) The other major soil type shown in figure 2 is *Alo-Vaquero* (401) complex, 30 to 50 percent slopes. This landform is characterized as high hills with grass and forbs covered hills having a steep slope. The soil depth is classified as moderately deep with a depth to bedrock of 24 to 40 inches. There is no flood hazard associated with this soil type as hazard. The surface runoff is listed as high to very high which leaves the soil naturally well drained with severe water erosion in bare areas. The depth to bedrock is 24 to 40 inches and the ground water is greater than 6 feet

(5) Another soil type on the former bomb target is *Vaquero-Carbona* (430) complex, 8 to 30 percent slopes. The landform contains the high hills of the *Vaquero* soil and side slopes of uplifted dissected terraces of the *Carbona* soil producing a rolling to hilly topography with annual grasses and forbs. The soil depth is moderately deep with a bedrock depth of 20 to 40 inches. The natural drainage is classified as well drained with a water table greater than 6 feet. The surface runoff is medium to very high and water erosion in bare areas is moderate to severe. There is no flood hazard associated with this soil.

e. **Hydrology**

(1) The area consists of three parallel natural physiographic divisions: The mountainous and foothill areas to the west; a broad central valley plain consisting of smooth confluent alluvial fans built-up by small streams flowing from the hills on the west; and the narrow flood plain of the San Joaquin River on the east (Reference B-9)

(2) Currently there is no published study of the hydrology west of US Interstate 5. A new document is being produced by Stanislaus County and will be published on the Internet at <http://www/ca/mrcs/usada.gov/mlra/westan/Index.html>. The data for the general water table depth is included in table 3-2 above.

(3) The Salada Creek which runs through project area D and another unnamed intermittent stream that runs through project area C drain the precipitation runoff into the California Central Valley. The landowner has dug several wells to provide water for his livestock. One of these wells is sited near the location of a former bomb

target in project area B. In general the area depth to the water table is greater than 6 feet.

f. Natural Resources

(1) The soils of western Stanislaus County support a variety of plants that produce food and cover for many different kinds of wildlife. The primary ecological communities include trout streams, scrub oak, upland mixed hardwood and pine (reference B-10).

(2) The primary game species are white-tailed deer, bobwhite quail, squirrel and wild turkey. Since the site is mostly undeveloped, the wildlife habitat has been maintained with minimal disturbances from urbanization.

(3) Natural resources, which are listed as threatened, endangered, or of special concern are listed in Table 3-3.

TABLE 3-2 Natural and Historical/Cultural Resources		
Resource Classification	Type	Comments
Wildlife	Mammals	
	<i>woodrat</i>	<i>Endangered</i>
	<i>San Joaquin kit fox</i>	<i>Endangered</i>
	Reptiles	
<i>blunt-nosed leopard lizard</i>	<i>Endangered</i>	
<i>giant garter snake</i>	<i>Threatened</i>	
Birds		
	<i>mountain plover</i>	<i>Proposed Threatened</i>
Plant	None Noted	
Historical Archaeological	None Noted	Contact SHPO
Historical Structures	None Noted	Contact SHPO
Cultural	None Noted	Contact SHPO

d. **Historical/Cultural Resources**

(1) At the present time there are no known historical or cultural resources noted on the former Stanislaus Bomb Target.

(2) If any further actions are required on this site, the California State Historic Preservation Office, telephone number (909) 792-1497, should be contacted (reference B-9).

4. HISTORICAL ORDNANCE PRESENCE

a. **Chronological Site Summary**

(1) In mid 1943, the United States Navy acquired 640 acres in Stanislaus County to establish a bomb target for the nearby Crows Landing NAAS. The property was acquired through leasehold to be renewed annually (see documents F-1, F-2, G-1, G-2 and G-3).

(2) In January 1946 the air station was on a document which listed the bomb targets to be dis-established (see document F-8). In June 1946 Crows Landing was directed to move from caretaker to inactivate status (see document F-10). By February 1947 the status of the air station was changed from caretaker to inactive and listed as dis-established (see document F-11). An undated document from P.W. (Public Works) Dwg No. 646 listing the Bombing Targets, Twelfth Naval District (see document F-12)

b. **Review of Ordnance Related Records**

(Note: Detail reference material for the former NAAS Crows Landing is difficult to obtain as all the records pertaining to NAAS Crows Landing are currently the property of the National Air and Space Administration (NASA), Moffett Field, California. The records have been moved several times and their current location is unknown as of this ASR)

(1) The former site was used by NAAS/ALF (Auxiliary Landing Field) Crows Landing. The operational control of the site was the responsibility of Crows Landing (see documents F-1 through F-11)

(2) No records could be located that indicated the ordnance ordered, stored or used by the above air stations on this target. However training records exist that identify the units and the aircraft that trained at Crows Landing (see document K-4 and K-5).

(3) Three documents discuss the day to day operations and identities of various targets to include that the Crows Landing bomb target was incorrectly listed as Target No. 9 in another letter (see document F-3, F-4, F-7 and F-9).

(4) One document describes one of the Crows Landing's targets as a "dive and glide bombing target comprising 640 acres, 500 feet high in the foothills, 3-1/2 miles southwest of the station". That is an error as there are no targets located in that vicinity. Bomb Target No. 7 is located 3.5 miles northwest of the station at the same approximate altitude (see document F-5).

(5) A document states that in June 1945, an FM (Wildcat) crashed at bombing target number 7, three miles northwest of the station while practice bombing. The document further states that grass fires were a problem for all of Crows Landing's targets (see document F-6).

c. Interviews with Site Related Personnel

Interview I-1 with Mr. Stanley Cox: His family owned the property that comprised Stanislaus Bomb Target No. 7. During WWII the Navy leased this bomb target and used it until the cessation of hostiles at the end of WWII. The family did not approve of the numerous grass fires, which were started with the practice bombs. The Navy built a road from Oak Flat Road to the location of project area B. There were obsolete vehicles that the Navy used for targets placed along the road and several circles were drawn on hilltops. When the Navy withdrew its use of the target, he remembers them digging a huge trench with a dozer and putting the surface debris into the trench. The trench was closed up and the Navy departed.

5. SITE ELIGIBILITY

a. **Confirmed Formerly Used Defense Sites**

(1) Former land usage by the Department of Defense was confirmed from 1943 to 1946 as summarized in Table 3-1 of this report. The former Stanislaus Bomb Target Number 7 comprised 640 acres of lease land.

(2) During the onsite investigation, the site inspection team (SI) noted many underground metallic anomalies west and north of the original 640 acres. The SI team added an additional 71 acres for a total of 711 acres. This additional acreage increase will allow a safety buffer zone to extend beyond the western most bomb target.

(3) Today, no portion of the former Stanislaus Bomb Target Number 7 remains with the Department of Defense (see plate 4).

b. **Potential Formerly Used Defense Sites**

All acreage for this site was covered in the Finding and Determination of Eligibility, dated 21 September 1999. No other previously unknown acreage with potential ordnance presence was discovered during this site investigation or document search (see document E-1).

6. VISUAL SITE INSPECTION

a. **General Procedures**

(1) During the period 11 through 15 June 2001, members of an SI team traveled to the former Stanislaus Bomb Target Number 7. The primary task of the site inspection was to assess OE presence or potential due to use as a former bombing range. The on-site inspection was limited to non-intrusive methods. Subsurface sampling was not authorized or permitted.

(2) Before the on-site visit, a thorough review of all available reports, historical documents, and available reference material gathered during the archival search were reviewed to ensure awareness of potential ordnance usage and types.

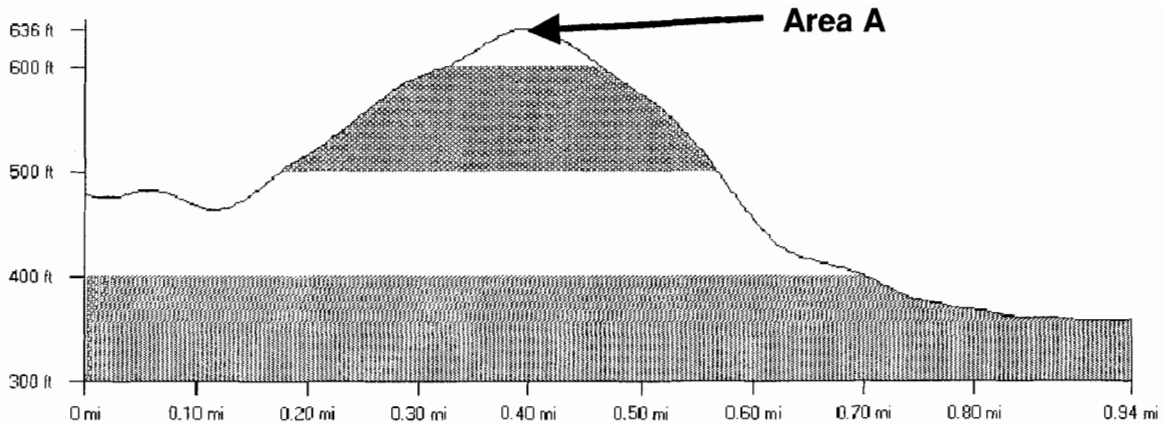
(3) A site safety plan was developed and utilized by the assessment team to ensure safety from injury during the site inspection of the facility. A briefing was conducted which stressed that military explosive ordnance disposal (EOD) personnel are the only ones authorized to handle OE (reference B-3).

(4) For the purpose of this report, the SI team assessed the site to determine the extent of ordnance presence. A rights-of-entry was not required as the present owners were agreeable to having the SI team inspect the property. The results of that inspection are noted in the following paragraphs.

(5) In general there are no trees or bushes to breakup the hill topography. The ground cover consists of a thick bed of wild oats and the occasional weed patch. Evidence of cattle grazing dot the landscape with dung and the many cows paths that seem to meander across the hillsides. A windmill with a galvanized water tank at its base is located near one of the project areas. Blocks of salt for the cattle are placed in a random pattern throughout the site area. Some of cattle were still calving, so Mr. Cox had requested that the SI team keep well away from the cattle as some were still calving and he did not want them to become excited and possibly trample any calves.

b. **AREA A: Bomb Target**

(1) Since site closure this grassy but treeless area has been used for cattle grazing. The property entrance is through a gate located 1.13 miles west of U.S. Interstate 5 off of Oak Flat Road onto a dirt road shown in document J-1. Travel north on the dirt road approximately .8 miles, turn left and follow the an old overgrown road for .3 miles to the top of the tallest hill in the area (see photo J-1).



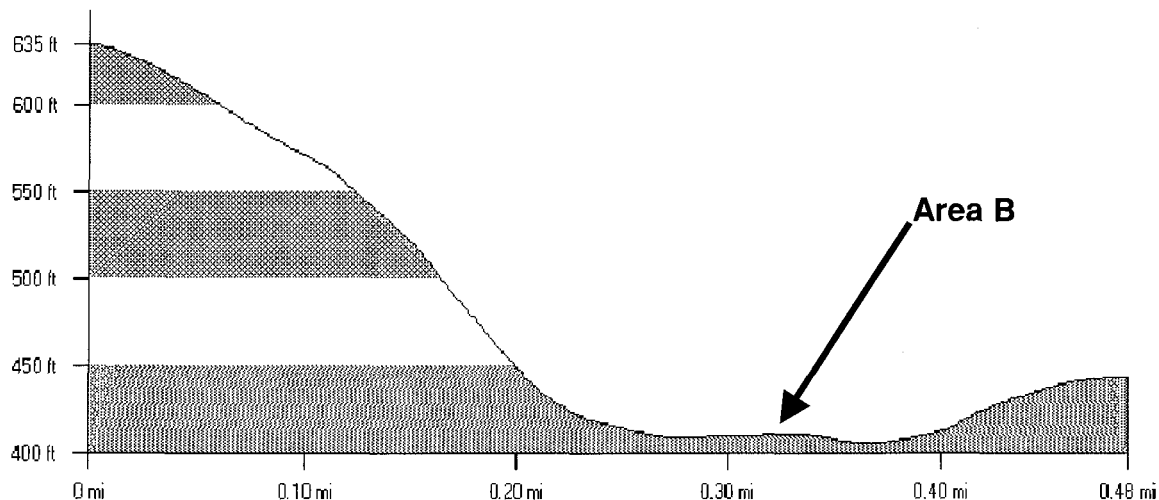
(2) The hillside is a steep 15percent (%) grade from the base rising 220-feet in .3 miles. On the summit the hill a 13-acre area flattens out to a small plateau. White rocks that formed the target circle are visible as well as a weathered 15-foot pole and some scrap white painted lumber (see photographs J-1 and J-2). This hill has a commanding view of the area and the Central Valley through an arc that extends from the northwest (320°) around to the south (180°) (see photo J-2). The only hills higher are west approximately 1-mile away.

(3) There are many subsurface metallic anomalies on the hilltop near the target center. These radiate outward in a general southeast to northwest direction. The SI team followed the metallic anomalies for approximately 2,400 feet to the northwest.

(4) The surface debris indicted that Mk23 miniature practice bombs were used in this area. No debris from the larger 100-pound practice bombs were noted on this target site.

c. **AREA B: Bomb Target**

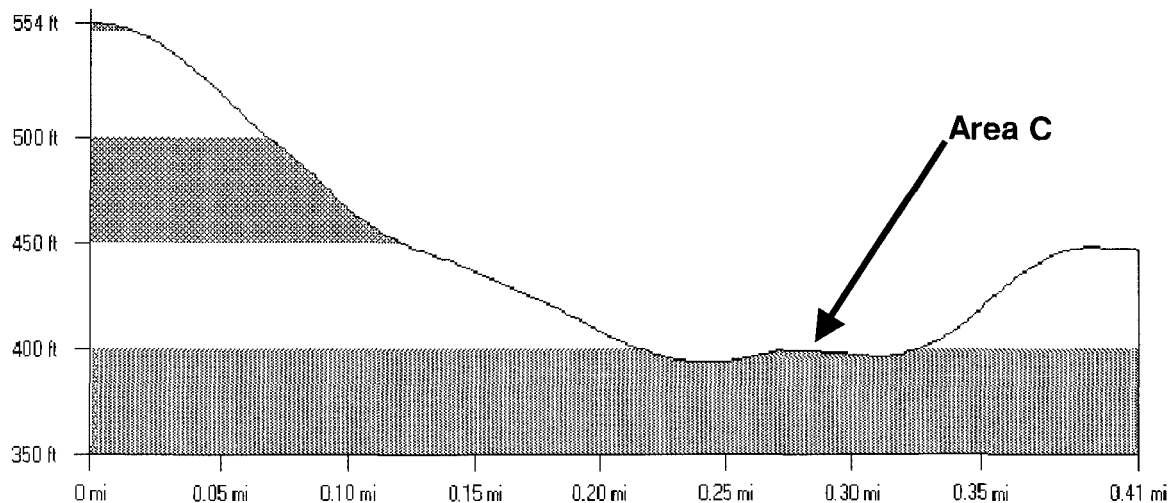
(1) This 13-acre target is to the east of Area A and lies at the base of the hill in a valley. The valley is laid out like an amphitheater with Area A's hill and the hills directly north of the target forming a backdrop. The front is open to the east, which gradually drops in elevation to the interstate. Since site closure Mr. Cox has placed a windmill, cattle feeder and a galvanized water tank at this location.



(2) Evidence of Navy usage is noted by the practice bomb debris that extends in a general southeast to northwest direction. The debris indicates that larger 100-pound practice bombs as well as miniature bombs were used (see photos J-4, J-5 and J-6).

d. **AREA C: Vehicle Target**

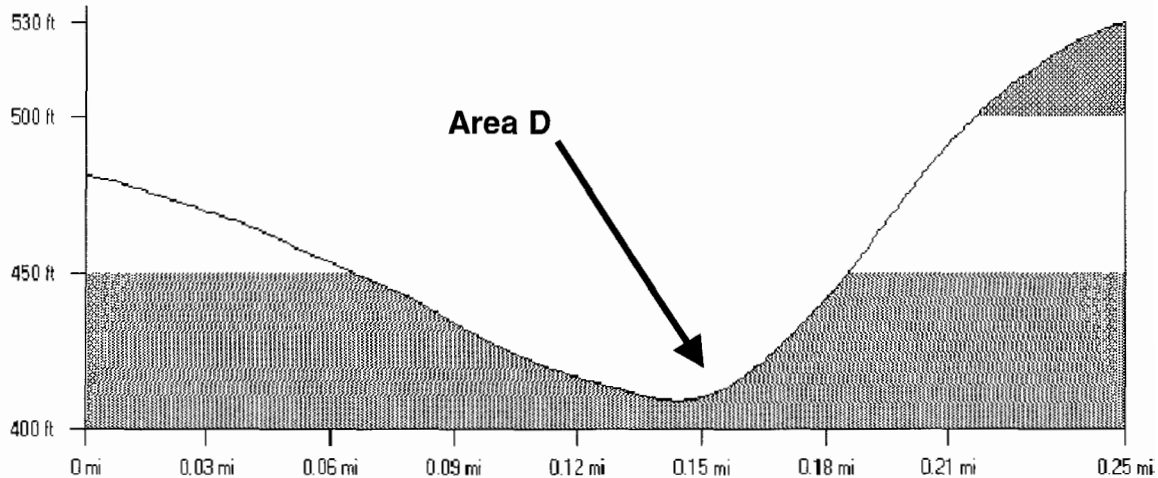
(1) Area C's 18-acre is in the middle of the 640-acre property that was leased by the Navy. It basically comprises a section of the north-south road that extends from the entrance on Oak Flat Road. It is approximately 700-feet wide by 1,500-feet long and is bordered by two steep hills on either side. The west hill rises 150-feet at a 10% grade while the east hill rises 50-feet at a 9% grade (see photos J-1 and J-2).



(2) The SI team noted many broken pieces of 100-pound (Mk15) and miniature practice bombs (Mk23) (see photos J-6 and J-7). The majority of the Mk23 were observed along the east side of the road, while the Mk15 debris was mostly on the hillsides. Also smaller pieces of motor vehicles are scattered near the road and up the hillside. Near the crest of the east hill, the rear portion, to include the fins, from a larger water bomb that had impacted into the cement hard surface was noted lying on the surface.

e. **AREA D: Vehicle Target**

(1) This 13-acre area is almost the same size as Area C. It lies in a shallow draw along an intermittent stream that extends west approximately 900 feet off the north south road. The turnoff is approximately .3 miles north of the property entrance gate.



(2) This area lies in a general southeast to northwest direction and rises approximately 44 feet between two hills. The surface has the trace of a former roadway that ran parallel with the stream. This area contained most of the observed 100-pound practice bombs debris. The north hillside has an occasional bomb body part with the streambed containing the majority of the bomb debris (see photos J-3 and J-6). The streambed also contained very large dry rotted tires. It is not known if the tires were placed there for erosion control or if they were a part of the target array.

f. **AREA E: Suspected Burial Site**

(1) This 3-acre sub-area is located on a hilltop approximately 1,800 feet north of Oak Flat Road and 300 feet from the west boundary of the original 640 acre (see photo J-2). Mr. Cox states that the Navy used a dozer and dug a trench on that hilltop. "They (Navy) gathered up the left overs (target debris) and deposited them in the trench, covered it up and left".

(2) The SI team investigated the area both visually and with their magnetometers. The many strong "hits" push the magnetometer indicators off scale confirming that metal objects were buried in that region. The anomaly field laid in a general west to east direction.

(3) The team did not notice any surface OE debris, however the magnetometer confirmation and Mr. Cox's statement that the Navy buried items at this location confirms that potential OE related items do exist at this location.

g. **AREA F: Safety Buffer Zone**

(1) There is no historical document that defines the limit for a safety buffer zone. This area was established by the SI team based on the extent of OE debris.

(2) The 253-acre safety buffer zone extends beyond the western boundary of the original 640 acres because of the OE debris that was noted by an on-site inspection. The zone was setup to take in the extent of the debris based on that inspection (see Plate 3).

(3) The SI team noted practice bomb metal fragments through the area, but never in any concentration. The observed fragments appear to be from target misses and some of them extend beyond the original 640-acre site. There was one area where the subsurface metallic anomalies seemed to be concentrated. That area was west of the former boundary and covered approximately 2-acres. The SI team suspects another burial pit. Mr. Cox was not aware of a second pit, but that possibly cannot be ruled out.

h. **AREA G: Remaining Lands**

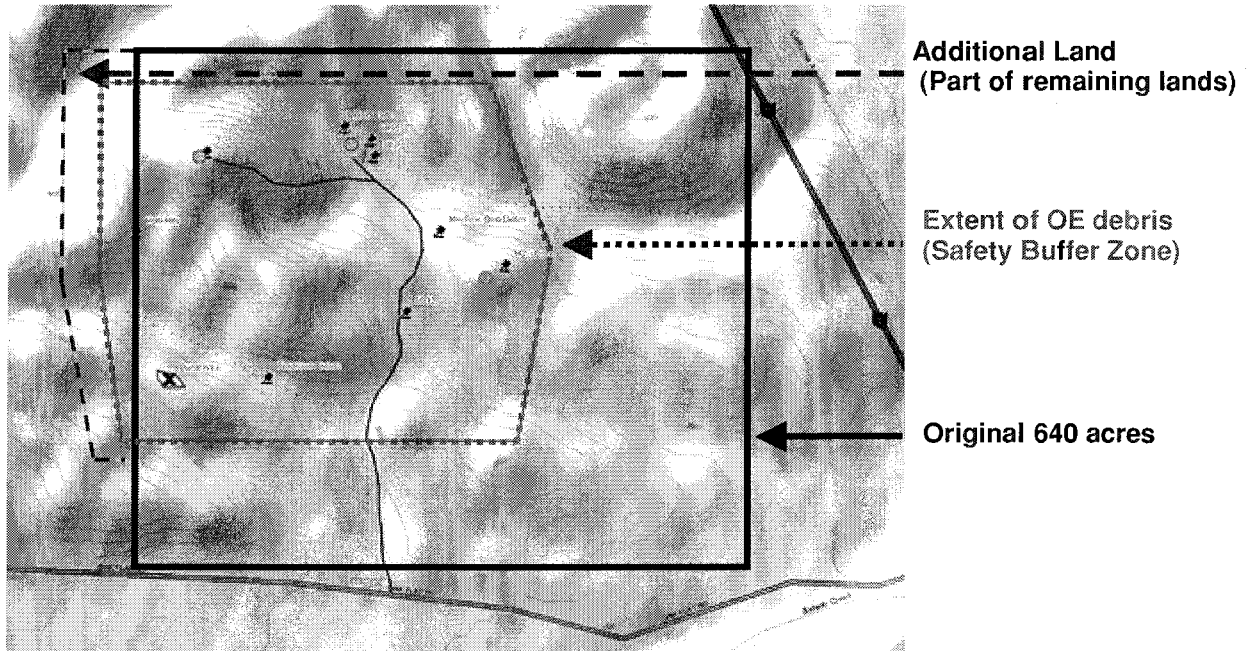


Figure 3: Stanislaus Bomb Target land usage map

(1) This 398-acre area, which includes the additional 71 acres, was free from any visually or magnetometer observed OE debris.

(2) West of Area A the terrain dips into a valley and rises in the center to drop again near its southern boundary. The western boundary parallels the high power lines that existed when the site was active. The eastern 1/3 of the remaining lands is characterized by two high grass covered hills (see photo J-2). The general view of the site area was taken from a rest area on U.S. Interstate 5 (see photo J-11).

7. EVALUATION OF ORDNANCE PRESENCE

a. **General Procedures**

(1) The site was evaluated to determine the extent of confirmed, potential, or absence of ordnance. **Confirmed** ordnance and explosive (OE) presence is based on verifiable historical evidence or direct witness of OE items (with explosive components and/or inert debris/fragments) since site closure. Verifiable historical record evidence is based on OE items actually

seen on site since site closure and authenticated by: historical records (Archive Records, Preliminary Assessment Reports, Site Investigation Reports), local fire departments and law enforcement agencies/bomb squads, military Explosive Ordnance Disposal (EOD) Units, newspaper articles, photographs, or maps. Direct witness of OE items consists of the site inspection team(s) and other credible witnesses as determined by the ASR Research Team Leader (landowners, workers on-site, soldiers who served there, etc.) verifying that they have seen OE presence on the surface or subsurface since site closure.

(2) **Potential** ordnance presence is based on a lack of confirmed ordnance presence. Potential ordnance presence is inferred from records or indirect witness. Inference from historical records is based on no OE items actually seen on site since site closure and would include documentation (records, aerial photographs, maps) indicating possible OE presence derived from common practice in production, storage, use, or disposal at that time and from records indication known OE usage. Potential ordnance presence derived from common practice in production, storage, use, or disposal at that time and from records indicting known OE usage. Potential ordnance presence could also be based upon indirect witness or from present day site features. Additional field data is needed to confirm potential ordnance sub-sites.

(3) **No OE Presence** sub-sites are based upon a lack of confirmed or potential ordnance evidence. There is no reasonable evidence, either direct or inferred, to suggest present day ordnance presence. Additional field data is not needed to assess no OE presence sub-sites.

b. **AREA A: Bomb Target**

This area is a **confirmed** OE presence area. The target debris and the many subsurface anomalies associated with this area confirm its use as an aerial bomb target.

c. **AREA B: Bomb Target**

This area is a **confirmed** OE presence area. Debris from miniature and 100-pound practice bombs litter most of this 13 acres project site.

d. **AREA C: Vehicle Target**

Miniature and 100-pound practice bomb debris was noted the entire length of this project area. This confirms this area as a **confirmed** OE presence location.

e. **AREA D: Vehicle Target**

100-pound practice bombs are the only OE debris noted in this project area. The presence of practice bomb debris in this area confirms this area as a **confirmed** OE presence location.

f. **AREA E: Suspected Burial Site**

Although the SI team did not notice OE related debris on the surface, the large subsurface anomaly field confirms Mr. Cox's statement that the Navy buried the expended practice bombs in this general location. This sub site warrants a **Potential** OE presence based on witness statement and the result of a magnetometer survey.

g. **AREA F: Safety Buffer Zone**

Since the SI team noted OE related debris within this area, this qualifies the area as a **Potential** OE presence sub site.

h. **AREA G: Remaining Lands**

The SI team did not note any visual or subsurface metallic anomaly through this entire sub site, which makes it a **no OE presence** area.

7. SITE ORDNANCE TECHNICAL DATA

a. **End Item Technical Data**

(1) While no comprehensive list of the exact models of ammunition used at the former Stanislaus Bombing Target could be located, the historical documents state that practice and possibly high explosive bombs were present on the site.

(2) Tables 8-1 and 8-2 have been developed to establish a list of ordnance items; their fillers and

chemical data of ordnance fillers that were possibly used at the former site. The specifications for these ordnance items are included in appendix D. As there is no evidence that any of these items remain at the site, this is included for reference purpose only. This table has been developed based on historical documentation. The model numbers used are speculative and are based on common models that existed during World War II.

TABLE 8-1 AMMUNITION USED AND EXPLOSIVE/CHEMICAL FILLER			
ITEM	TYPE/MODEL	FILLER/WEIGHT	FUZE
Bomb, Practice, 3 lb w/signal	AN-MK 23 AN-MK 4	Inert (cast iron) 10 gm zinc oxide 3 gm black powder Titanium Tetrachloride	N/A
Bomb, Practice, 3 lb w/signal	AN-MK 5 AN-MK 4	Inert (zinc alloy) see above	N/A
Bomb, Practice, 100 lb w/spotting charge	Mk 15	80 lbs. Sand 30-cal. blank cartridge Inert (sand filled) 1 lb. black powder	N/A
Bomb, Practice, 500 lb w/o spotting charge	Mk 5/15/21	80 lbs. Sand Inert (sand filled)	N/A

b. **Chemical Data of Ordnance Weight and Fillers**

Table 8-2 on the next page has been developed to provide information on the explosive/chemical compounds used in the ordnance cited in table 8-1.

TABLE 8-2 CHEMICAL DATA OF ORDNANCE FILLERS*		
EXPLOSIVE MATERIAL	SYNONYMS	CHEMICAL COMPOUNDS
Black powder		
74* potassium nitrate	Saltpeter; Niter	KNO ₃
11* sulfur		S
16* charcoal		C

* Most frequently used chemical compositions and their major ingredients

9. OTHER ENVIRONMENTAL HAZARDS

a. **Hazardous, Toxic, and Radiological Waste**

The on-site inspection did not reveal any suspected hazardous or toxic waste that can be attributed to the use or storage of ordnance on this site.

b. **Building Demolition/Debris Removal**

(1) There were no hazardous structures that need demolition or removal within the former Stanislaus Bomb Target Number 7 Stanislaus County, California.

(2) There were no other BD/DR hazards discovered during this ASR in the areas that the SI inspected.

ORDNANCE AND EXPLOSIVES
ARCHIVES SEARCH REPORT
FOR
STANISLAUS BOMBING TARGET
STANISLAUS COUNTY, CALIFORNIA
PROJECT NUMBER JO9CA107401

APPENDIX A

REFERENCE AND SOURCES

**ORDNANCE AND EXPLOSIVES
ARCHIVES SEARCH REPORT**

Organization	Name	Telephone	Nature of Support
<u>GOVERNMENT SOURCES</u>			
Federal			
Department of Defense			
Defense Technical Information Center 8725 John J. Kingman Road Suite 0944 Fort Belvoir, VA 22060-6218	Staff (DTIC)	(703) 427-8274	No information found on this site.
Department of Defense Explosives Safety Board 2461 Eisenhower Avenue Alexandria, VA 22331-0600	Staff (DDESB)	(703) 325-1369	No information found on this site.
Secure Stinet 8725 John J. Kingman Road, Suite 0944 Fort Belvoir, VA 22060-6218	Staff (STINET)	(703) 767-8228	No information found on this site.
U.S. Army			
787 th Ord Det (EOD) 385 Bushnell Street Moffett Field, CA 94035	SGT Rodriguez	(415) 603-8301 Fax 603-8305	No record of responses to site or area.
IOC Historical Office Attn: AMSIO-PA Bldg. 390 Rock Island, IL 61299	Tom Slattery	(309) 782-1450	No information found on this site.

REFERENCE SOURCES (Continued)

The following organizations and personnel are acknowledged for their support

Organization	Name	Telephone	Nature of Support
<u>GOVERNMENT SOURCES</u>			
Federal			
U.S. Army (Continued)			
Rock Island Arsenal Museum Attn: SIORI-CFS-M Bldg. 60 Rock Island, IL 61299-5000	Chris Leinicke	(309) 782-5021 Fax 782-3598	Technical manuals.
U.S. Army Chemical School Fisher Library Bldg. 1081 Fort McClellan, AL 36205	Joyce A. Waybright	(205) 848-4414	No information found on this site.
U.S. Army Military History Institute Reference Library 22 Ashburn Drive Carlisle Barracks Carlisle, PA 17013-5008	Louise Frend	(717) 245-3611 Ext 3103 Fax (717) 245- 3711	No information found on this site.
U.S. Army Military History Institute Archive Branch 22 Ashburn Drive Carlisle Barracks Carlisle, PA 17013-5008	David Keough	(717) 245-3189	No information found on this site.
U.S. Army Military History Institute Phcto Archives 22 Ashburn Drive Carlisle Barracks Carlisle, PA 17013-5008	Mike Winey	(717) 245-3434	No information found on this site.
U.S. Army Ordnance Museum Aberdeen Blvd. Bldg. 2601 Aberdeen PG, MD 21005-5201	Dr. Atwater	(410) 278-3602	No information found on this site.

REFERENCE SOURCES (Continued)

The following organizations and personnel are acknowledged for their support

Organization	Name	Telephone	Nature of Support
<u>GOVERNMENT SOURCES</u>			
Federal			
U.S. Army (Continued)			
U.S. Army SBCCOM Attn: AMSSB-SCI-H 5232 Flemming Road Aberdeen PG, MD 21010	Kathleen Ciolfi	(410) 436-4430	Provided no evidence of chemical warfare materials used at the site.
U.S. Army Technical Center for Explosives Safety Library Attn: SIOAC-ESM 1 C Tree Road McAlester, OK 74501-9002	Chris Holiday	(918) 420-8772	Reference sources.
USACE, Sacramento District ATTN: CESPK-ED-E 1325 J Street Sacramento, CA 95814-2922	Mike Metro	(916) 557-7803	INPR File
USACE, Office of History Humphreys Engineer Center ATTN: CEHO-ZA 7701 Telegraph Road Alexandria, VA 22315-3865	Staff	(703) 428-6554	See Appendix B, Section II, Parts A and B
U.S. Air Force			
Air Force Historical Research Agency, Research Division (AFHRA) 600 Chennault Circle, Bldg. 1405 Maxwell AFB, AL 36112-6424	Joe Caver Ann Web	(334) 953-5834	No information found on this site.

REFERENCE SOURCES (Continued)

The following organizations and personnel are acknowledged for their support

Organization	Name	Telephone	Nature of Support
<u>GOVERNMENT SOURCES</u>			
Federal			
U.S. Air Force (Continued)			
Air Force Historical Research Agency (AFHRA) Information Systems Division 600 Chennault Circle, Bldg. 1405 Maxwell AFB, AL 36112-6424	IRIS System Sheila Roten IRIS Microfilm Essie Roberts	(334) 953- 6884/2439 Fax 953-7428	No information found on this site.
Air Force Climatology Center (AFCCC) ATTN: DOO 151 Patton Avenue, Room 120 Asheville, NC 28801-5002	Air Force Staff	(828) 271-4291	Local climatological data provided for California
Air University Library 600 Chennault Circle, Bldg. 1405 Maxwell AFB, AL 36112-6424	Staff	(334) 953-2888	No information found on this site.
U.S. Navy			
Marine Corps Historical Center Washington Navy Yard Bldg. 58 901 M Street SE Washington, DC 20374-5040	Staff	(202) 433-3447	See Appendix B, Section II, Parts A and B
NAVFAC Historian Office CB Logistics Center, CODE 09 (Bldg 99) 4111 San Pedro Street Port Hueneme, CA 93043	Dr. Vince Transano Carol Marsh	(805) 982- 5913/5563	No information found on this site.

REFERENCE SOURCES (Continued)

The following organizations and personnel are acknowledged for their support

Organization	Name	Telephone	Nature of Support
<u>GOVERNMENT SOURCES</u>			
Federal			
U.S. Navy (Continued)			
Technical Information Center Attn: Code 72 1100 23 rd Avenue Port Hueneme, CA 93043	Brian Thompson	(805) 982-1124	No information found on this site.
Naval Facilities Engineering Command Detachment CB Logistics Center Code 462 (Bldg 1443) 4111 San Pedro Street Port Hueneme, CA 93043-4410	Mona Leon- Guerrero	(805) 982-3057	No information found on this site.
NAVEODTECDIV Technical Library 2008 Stump Neck Road Indianhead, MD 20640-5070	Betty Arbogast Dawn Risko	(301) 743-6834	No information found on this site.
Naval Historical Center Washington Navy Yard Operational Archives 901 M Street SE Washington, DC 20374-5060	Staff	(202) 433-2833	See Appendix B, Section II, Parts A and B
Naval Historical Center Washington Navy Yard Navy Department Library 901 M Street SE Washington, DC 20374-5060	Staff	(202) 433-4132	See Appendix B, Section II, Parts A and B

REFERENCE SOURCES (Continued)**The following organizations and personnel are acknowledged for their support**

Organization	Name	Telephone	Nature of Support
<u>GOVERNMENT SOURCES</u>			
Federal			
U.S. Navy (Continued)			
Naval Facility Engineering Command, SW Division 1220 Pacific Hwy., Bldg 127 San Diego, CA 92132	Tom Phelps Chris Maves	(619) 532- 1169/3769	Provided target maps for Naval Auxiliary Landing Field, Crows Landing and aerial photographs.
U.S. Naval War College Archives 686 Cushing Rd Newport, RI 02841-1207	Dr. Evelyn Cherpack	(401) 841-2435	No information found on this site.
Naval Historical Center Washington Navy Yard Naval Aviation History Branch 901 M Street SE Washington, DC 20374-5060	Staff	(202) 433-4407	See Appendix B, Section II, Parts A and B
U.S. Naval War College Library 686 Cushing Rd Newport, RI 02841-1207	Alice Juda Maggie Rauch	(401) 841-4551	No information found on this site.
U.S. Naval War College Museum 686 Cushing Rd Newport, RI 02841-1207	Tony Nicolosi Bob Cembrola	(401) 841-4052	No information found on this site.
Other Federal Agencies			
National Archives			
NARA-Archives I Old Military and Civil Textual Division Pennsylvania Avenue & 7 th Street NW Washington, DC 20408	Staff	(202) 208-1903 (202) 219-6273 (202) 208-0370	See Appendix B, Section II, Parts A and B

REFERENCE SOURCES (Continued)

The following organizations and personnel are acknowledged for their support

Organization	Name	Telephone	Nature of Support
<u>GOVERNMENT SOURCES</u>			
National Archives (Continued)			
NARA-Archives II (Cartographic & Architectural Branch) 8601 Adelphi Road College Park, MD 20740	Staff	(301) 713-7040	See Appendix B, Section II, Parts A and B
NARA-Archives II (Motion Picture, Sound, and Video Branch) 8601 Adelphi Road College Park, MD 20740	Staff	(301) 713-7060	See Appendix B, Section II, Parts A and B
NARA-Archives II (Still Picture Branch) 8601 Adelphi Road College Park, MD 20740	Staff	(301) 713-6660	See Appendix B, Section II, Parts A and B
NARA-Archives II (Textual Reference Branch) 8601 Adelphi Road College Park, MD 20740	Staff	(301) 713-7250	See Appendix B, Section II, Parts A and B
NARA-Southeast Region(Atlanta) 1557 St Joseph Ave. East Point Ga, 30344-2593	Gary Fulton	(404) 763-7474	See Appendix B, Section III, Parts A and B.
National Personnel Records Center (Military Personnel Records) 9700 Page Avenue St. Louis, MO 63132-5100	Wilson Sullivan	(314) 538-4085	See Appendix B, Section III, Parts A and B.

REFERENCE SOURCES (Continued)**The following organizations and personnel are acknowledged for their support**

Organization	Name	Telephone	Nature of Support
<u>GOVERNMENT SOURCES</u>			
Federal			
National Archives (Continued)			
Washington National Records Center 4205 Suitland Road Suitland, MD 20746-8001	Staff	(301) 457-7000	See Appendix B, Section II, Parts A and B
Library of Congress			
Library of Congress Geography and Map Division 101 Independence Avenue SE Washington, DC 20540-4650	Staff	(202) 707-5000	See Appendix B, Section II, Parts A and B
Library of Congress Prints and Photographs Division 101 Independence Avenue SE Washington, DC 20540-4650	Staff	(202) 707-5000	See Appendix B, Section II, Parts A and B
Department of the Agriculture			
USDA Consolidated Farm Service Agency 615 Paul Russel Rd Tallahassee, Fl 32301	Staff	(850) 877-3724	Aerials from annual crop survey flights
USDA Consolidated Farm Service Agency 1301 Redwood Way, Suite 190 Petaluma, CA 94954	Staff	(707) 794-1242 Ext 2	1987 and 1993 aerials

REFERENCE SOURCES (Continued)**The following organizations and personnel are acknowledged for their support**

Organization	Name	Telephone	Nature of Support
<u>GOVERNMENT SOURCES</u>			
Federal			
Department of the Agriculture (Continued)			
USDA, Aerial Photography Field Office P.O. Box 30010 2222 West 2300 South Salt Lake City, UT 84131-0010	Sherrie Holyoak	(801) 975-3503	No information found on this site.
USDA Natural Resource Conservation Service Modesto, CA 95207	Carmen		Soil survey for Stanislaus County.
Department of Commerce			
NGS, Information Services NOAA, N/NGS 12 National Geodetic Survey SSMC-3 #9202 1315 East-West Highway Silver Spring, MD 20910-3282	Joan Rikon	(301) 713-2692 Fax 713-4172	Coastal aerial photographs
NOAA National Climatic Data Center 151 Patton Avenue, Room 120 Asheville, NC 28801-5002	Staff	(828) 271-4800	Information on climatic data of California

REFERENCE SOURCES (Continued)

The following organizations and personnel are acknowledged for their support

Organization	Name	Telephone	Nature of Support
<u>GOVERNMENT SOURCES</u>			
Federal			
Department of Interior			
Department of Interior U.S. Geological Survey EROS Data Center Sioux Falls, SD 57198-0001	Staff	(605) 594-6151	Aerial photos
U.S. Geological Survey Information Services Denver Federal Center P.O. Box 25286 Denver, CO 80225	Staff	(303) 202-4700 (800) 435-7627	7.5 topographic quad maps and 1:100,000 scale maps
U.S. Geological Survey Earth Science Information Center (ESIC) P.O. Box 25286, Bldg. 810 Denver Federal Center Denver, CO 80225	Paula Erickson Steve Reiter Steve Johnson	(303) 202-4200 (800) 435-7627	No information found on this site.
State			
State			
California Military Museum 1119 2 nd Street Sacramento, CA 95814	Bill Davies	(916) 442-2883 Fax 442-7532	No information found on this site.
California State Archives 1020 East O St. Sacramento, CA 92415	Mr. Metzger	(916) 653-2246	No information found on this site.

REFERENCE SOURCES (Continued)

The following organizations and personnel are acknowledged for their support

Organization	Name	Telephone	Nature of Support
<u>GOVERNMENT SOURCES</u>			
State (Continued)			
California State Historic Preservation Office San Bernardino Archaeological Information Center 2024 Orange Tree Lane Redland, CA 92374	Robin Laska	(909) 792-1497 Fax 798-8585	Provided historical, cultural and/or archaeological resources located on the site.
(SHPO) Central California Information Center Department of Anthropology California State University Stanislaus 801 W. Monte Vista Ave. Turlock, CA 95382	Jonna Nunes	(209) 667-3307 Fax 667-3324	Provided archeological, historical, and cultural information on the site.
California State University San Bernardino Library 5500 University Parkway San Bernardino, CA 92407	Reference Librarian	(909) 880-5084 Fax 880-7084	Had no information on the site.
San Diego State University Special Collections 5300 Campanile Dr. San Diego, CA 92182-0511	Bill Payne	(619) 594-6791	Had no information on this site.
San Diego State University Government Documents/ Maps Section 5300 Campaline Dr. San Diego, CA 92182-0511	Bruce Harley	(619) 594-5832	Had no information on this site.

REFERENCE SOURCES (Continued)**The following organizations and personnel are acknowledged for their support**

Organization	Name	Telephone	Nature of Support
<u>GOVERNMENT SOURCES</u>			
State (Continued)			
(SHPO) South Coastal Information Center Social Sciences Research Laboratory San Diego State University San Diego, CA 92182-4537	Jan Culbert	(619) 594-5682	Had no information on this site.
University of California P.O. Box 19557 Irvine, CA 92110	Reference Desk	(714) 824-6836	Had no information on this site.
University of California Archives P.O. Box 19557 Irvine, CA 92713	Mary Ellen Goddard	(714) 824-7193	Had no information on this site.
University of California Government Documents Dept. P.O. Box 19557 Irvine, CA 92110	Jeff Schneidewind Kay Collins	(714) 824-7234	Had no information on this site.
Local			
Stanislaus County Assessor 1010 Tenth Street Modesto, CA 95353	Mike DeFerrari	(209) 525-6586	Plat maps
County Sheriff Sub-office Patterson, CA	Staff	(209) 552-2468	Had no information on this site.

REFERENCE SOURCES (Continued)

The following organizations and personnel are acknowledged for their support

Organization	Name	Telephone	Nature of Support
<u>NON-GOVERNMENT</u>			
National			
Coast Defense Study Group, Inc. 1560 Somerville Road Bel Air, MD 21015	Publication Mark Berhow	<u>berhowma@worldnet.att.net</u>	No information found on this site.
Council on America's Past 518 West Why Worry Lane Phoenix, AZ 85021	Heliogram Publication	(800) 396-4693	No information found on this site.
FirstSearch 6565 Frantz Road Dublin, OH 43017-3395	Staff	(800) 848-5878	No information found on this site.
Scientific & Technical Information Library System Defense Ammunition Center John L. Byrd Jr. Technical Library ATTN: SIOAC-ESM 1 C Tree Rd McAlester, OK 74501-9002	(STILAS) Staff	(918) 420-8771	No information found on this site.
California Historical Society 678 Mission Street San Francisco, CA 94105	Beth Grahm	(415) 357-1848 Fax 357-1850	No information found on this site.
California Military Museum 1119 2nd Street Sacramento, CA 95814	Staff	(916) 442-2883 Fax 442-7432	No information found on this site.
On-line Computer Library Center 6565 Frantz Road Dublin, OH 43017-3395	Computer Search (OCLC)	(800) 848-5878	No information found on this site.

REFERENCE SOURCES (Continued)**The following organizations and personnel are acknowledged for their support**

Organization	Name	Telephone	Nature of Support
<u>NON-GOVERNMENT</u>			
National (Continued)			
Heritage Press 102 West 6th Avenue Escondido, CA 92025	Meredith Vezina	(760) 735-9313 Fax 432-9043	No information found on this site.
SIRSI Corporation 101 Washington Street, SE Huntsville, AL 35801-4827	Computer Search (STILAS)	(918) 420-8771	No information found on this site.
Local			
Private Citizen	Mr. Stanley Cox Westly, CA 95387	(209) 894-5755	Interview I-1

ORDNANCE AND EXPLOSIVES
ARCHIVES SEARCH REPORT
FOR
STANISLAUS BOMBING TARGET
STANISLAUS COUNTY, CALIFORNIA
PROJECT NUMBER JO9CA107401

APPENDIX B
REFERENCES AND ABSTRACTS

BIBLIOGRAPHY

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Section II:	National Capitol Region Records Search
	Part A: Positive Findings
	Part B: Negative Findings
Section III:	Regional National Archive Findings
	Part A: Positive Findings
	Part B: Negative Findings

APPENDIX B

BIBLIOGRAPHIES
SECTION I

B-1 Army Regulation (AR) 200-1, *Environmental Quality, Environmental Protection and Enhancement*, Department of the Army, 23 April 1990. (Not included in this ASR)

B-2 CEHND 1105-3-9, U.S. Army Corps of Engineers, Huntsville Division, *US Army Corps of Engineers, Management Plan for Ordnance and Explosive Waste (OE) Mandatory Center of Expertise (MCX and Design Center*, 10 August 1992. (Not included in this ASR)

B-3 Site Safety Plan for OE Investigations, U.S. Army Corps of Engineers, Rock Island District, dated August 1992, w/Appendix A-270. (Not included in this ASR)

B-4 DERP-FUDS Inventory Project Report for Stanislaus Bombing Target, Stanislaus County, California, Project Number JO9CA107401, 21 September 1999 (E-1, E-2 and E-3)

B-6 TM 9-1904, *Ammunition Inspection Guide*, War Department, 2 March 1944.

B-7 ORDATA II, version 1.0, *Enhanced International Deminers' Guide to UXO Identification Recovery and Disposal*, Naval EOD Technology Division, Indianhead, MD

B-8 Abbreviated Ordnance Data Sheets, extracted from United States Army Corps of Engineers, Saint Louis District Ordnance Database, TM 9-1325-200, *Bombs and Bomb Components*, April 1966 (D-1 and D-3), BOP 1280, *Aircraft Bombs*, February 1945 (D-2). (D-1 through D-3)

B-9 "Soil Survey of Stanislaus County-Western Part", www.ca.nrcs.usda.gov/mlra/wstan/index.html Extract used as documents L-1 through L-5.

B-10 Local Climatological Data, Annual Summary with Comparative Data, Modesto, California, Daily Data, 1982, National Oceanic and Atmospheric Administration, Asheville, NC.

Appendix B

BIBLIOGRAPHIES / SECTION I

Table of Contents (continued)

B-11 Memorandum from The Board to Inspection and Review Progress to Director of Plans, Bureau of Aeronautics, subj: *Naval Air Center, Alameda, 15 May 1943*, NARA II, RG 72 (Records of the Bureau of Aviation, 1942-1944) (F-1).

B-12 *Board Report, Inspection and Review of Progress at Naval Air Station, Alameda, California, 3 June 1943*, NARA II, RG 72 (Records of the Bureau of Aviation, 1942-1944) (F-2).

B-13 Letter to BUDocks from CNO (Chief of Naval Operations), Subj: *Request for Land Target Area in Vicinity of NAAS, Crows Landing, California, 28 August 1944*, NARA II, RG 38 (Records of the Office of the Chief of Naval Operations) (F-3).

B-14 Memorandum with appendences for the District Public Works Officer, subj: *Real Estate Activity Concerning Air Facilities, 21 November 1944*, NARA, Pacific Region, San Francisco, California, RG 181 (F-4).

B-15 *History, U.S. Naval Auxiliary Air Station, Crows Landing, California, June 1945*, Naval Historical Center, Aviation History Office, Box 205 (F-5).

B-16 *War History, U.S. Naval Auxiliary Air Station, Crows Landing, California, June to September 1945*, Naval Historical Center, Aviation History Office, Box 205 (F-6).

B-17 *Organization Chart, Naval Air Bases, 12 ND, July 1945*, Naval Historical Center, Aviation History Office, Box 298 (F-7).

B-18 Letter from Commander Fleet Air, Alameda to Commander Naval Air Bases, Twelfth Naval District, subj: *Dis-establishment of Bombing Targets, 8 January 1946*, NARA, Pacific Region, San Francisco, California, RG 181 (F-8).

B-19 *Target List to CNO, 5 December 1945*, NARA, Pacific Region, San Francisco, California, RG 181 (F-9).

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B-20 Memorandum from Commander Fleet Air, Alameda to Commander Naval Air Bases, Twelfth Naval District, subj: *Aviation Bombing Targets, Gunnery and Rocket Ranges and Boat Facilities in Excess of Post-War Aviation Requirements*, 2 February 1946, NARA, Pacific Region, San Francisco, California, RG 181 (F-10).

B-21 Memorandum from CNO to Chief Bureau of Aeronautics, Subj: *Reduction in status of NAAS Crows Landing, California*, 19 June 1946, NARA II, RG 38 (Records of the Office of the Chief of Naval Operations) (F-11).

B-22 *Naval Air Bases, Twelfth Naval District Status of Facilities*, 15 February 1947, NARA, Pacific Region, San Francisco, California, RG 181 (F-12).

B-23 *Bombing Target List Naval Air Bases, Twelfth Naval District*, date unknown, NARA, Pacific Region, San Francisco, California, RG 181 (F-13).

B-24 Letter from U.S. Department of the Interior, Fish and Wildlife Service, Sacramento, California, May 10, 2001, *Species List for Formally used Defense Sites...Stanislaus County, California* (F-14).

B-25 Letter from the Secretary of the Navy to the Attorney General discussing the acquisition of 640 acres in Stanislaus County to establish a dive-bomb target, 8 June 1943, NARA II, College Park, Maryland, RG 72 (G-1).

B-26 Lease between the US Government and Minnie Hansen for 160 acres in Stanislaus County, CA, 31 July 1943, NARA II, College Park, Maryland, RG 72 (G-2).

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B-28 Climate data for western Stanislaus County Tables 1, 2 and 3, <http://www.ca.nrcs.usda.gov/mlra/wstan/> (E-4 and E-5).

B-29 Specification for PB4Y-1 Liberator as used by the Navy <http://www.navylib.com/Specs.htm> (K-1).

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B-30 Specification for PB4Y-2 Privateer, <http://www.navylib.com/Specs.htm> (K-2).

B-31 Aerial photograph of Crows Landing 5 August 1947, ails.arc.nasa.gov/Images/Historical/jpegs/A92-0471-4_a.jpeg (K-3).

B-32 PB4Y-1, Navy Training Unit Liberators circa 1943, http://www.navylib.com/ContributedPics/S.Hawley/Y1SHUK3_t.jpg and http://www.navylib.com/ContributedPics/S.Hawley/Y1SHUK2_t.jpg (K-4).

B-33 In-flight photograph of PB4Y-2, <http://www.naval-air.org/PlanePictures> and late war Privateer at Crows Landing, <http://www.navylib.com> (K-5).

B-34 Patterson, California Quadrangle Map, http://www.topowest.com/California/Quads_by_name.html (L-1).

B-35 Soil maps of West Stanislaus County, California, <http://www.ca.nrcs.usda.gov/mlra/wstan/> (L-2 to L-5).

B-36 Aerial Photograph 6351-83, 05-22-93, Department of Interior, US Geological Survey, Sioux Falls, SD (L-6).

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NATIONAL CAPITAL REGION ARCHIVES FINDINGS

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STANISLAUS BOMBING TARGET, CA

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- RG 49, Records of the Bureau of Land Management
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Nothing Found
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ORDNANCE AND EXPLOSIVES
ARCHIVES SEARCH REPORT
FOR
VERNALIS DIVE BOMB AND ROCKET RANGE NUMBER 7
STANISLAUS, COUNTY, CALIFORNIA
PROJECT NUMBER JO9CA107401

APPENDIX C

GLOSSARY

APPENDIX C

GLOSSARY

AR	Army Regulation
BD/DR	Building Demolition/Debris Removal
CG	Commanding General
CEHNC	Corps of Engineers, Engineering & Support Center, Huntsville
CEMVR	Corps of Engineers, Mississippi Valley, Rock Island District
CESAM	Corps of Engineers, South Atlantic, Mobile District
CE	Corps of Engineers
CON/HTRW	Containerized Hazardous, Toxic, and Radioactive Waste
CWM	Chemical Warfare Material
DA	Department of the Army
DERP	Defense Environmental Restoration Program
DOD	Department of Defense
EE/CA	Engineering Evaluation/Cost Analysis
EOD	Explosive Ordnance Disposal
FDE	Findings and Determination of Eligibility
FUDS	Formerly Used Defense Sites
GSA	General Services Administration
HE	High Explosive
HTRW	Hazardous, Toxic and Radiological Waste
INPR	Inventory Project Report
IRA	Interim Removal Action
JEDMICS	Joint Engineering Drawings Management Information Control System
NDAI	No DOD Action Indicated
NARA	National Archives Records Administration
OE	Ordnance and Explosives
RA	Remedial Action
RAC	Risk Assessment Code
RG	Record Group
RPA	Real Property Accountability
SI	Site Inspection/Investigation
SOSAC-ESL	U.S. Army Technical Center for Explosives Safety, Ordnance Explosives Environmental Division
USACE	U.S. Army Corps of Engineers
USADAC	U.S. Army Defense Ammunition Center
USATCES	U.S. Army Technical Center for Explosives Safety
UXO	Unexploded Ordnance
WAA	War Assets Administration
WD	War Department

ORDNANCE AND EXPLOSIVES
ARCHIVES SEARCH REPORT
FOR
STANISLAUS BOMBING TARGET
STANISLAUS COUNTY, CALIFORNIA
PROJECT NUMBER JO9CA107401

APPENDIX D

TEXT/MANUALS

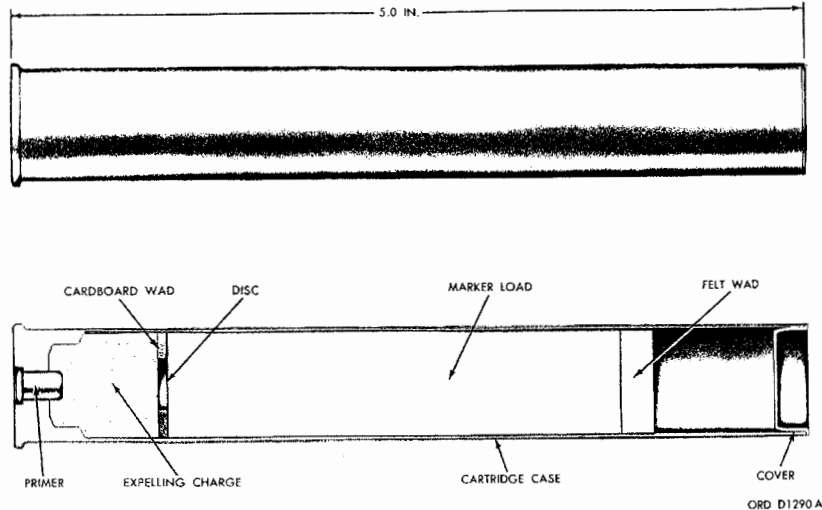
APPENDIX D

TEXT/MANUALS

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- D-1 Signal, Bomb, Practice Mk4, Mk6 and Mk7 (B-8).
- D-2 Bomb, Practice, Miniature, Mk 5, Mk 23, Mk 43 and Mk5, 15, 21-500 pound practice bomb (B-8).
- D-3 Bomb, Practice, 100 pound, Mk15 series (B-8).

SIGNAL, PRACTICE BOMB, Mk 4 Mod 3 & 4



Description. Practice Bomb signals Mk 4 Mods 3 and 4 are essentially 10-gauge shotgun shells. They contain an expelling charge of smokeless powder and are primed with a commercial primer. A pyrotechnic or inert marker load is separated from the expelling charge by a disc and cardboard gun wad. Felt gun wads that are cemented to the cover close the end of the shell.

Use. The signals are used in either the miniature or the larger practice bombs. However, installed in the miniature practice bombs, the signals do not consistently produce a visible signal when dropped from an altitude of 10,000 feet or higher. Released from that height, the bomb enters the water or earth so quickly that the signal frequently does not have time to function.

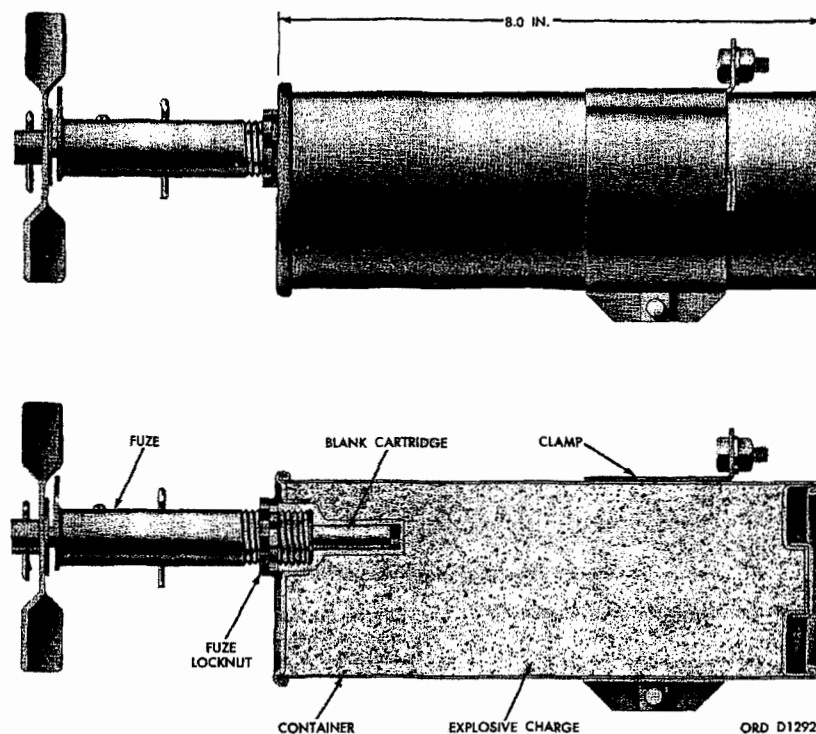
Functioning. When the practice bomb in which the signal is installed strikes water or the earth, impact causes the firing pin in the nose of the bomb to impinge upon the primer of the signal. The primer ignites the expelling charge, forcing the marker load out through an opening in the bomb. The resulting flash and puff of white smoke permit observation of bombing accuracy.

Differences. Signals Mk 4 Mod 0 was the first of this type developed. Mods 1 and 2 were procured later for issue to activities limited by environment to performing practice bombing in the vicinity of flammable areas. These signals contain inert materials that produce very little flash and are markedly inferior to the Mod 0. Mod 3 is similar to the Mod 0 but differs in that the cartridge case of the Mod 3 is extruded aluminum instead of paper; a primer mixture with improved storage characteristics has been used, a new pyrotechnic load has been incorporated. The Mod 4 signal is similar to the Mod 3 with the exception of an inert marker load of zinc oxide. In both Mods, the cover and cartridge case are cemented together; in Mod 3 the assembly also is staked in four equally spaced places.

Length and diameter	6.0 in by 0.85 in
Expelling charge	Smokeless powder
Marker load	Mod 3 Stabilized Red Phosphorous Mod 4 Zinc Oxide

Reference: TM 9-1325-200, *Bombs and Bomb Components*, April 1966

SIGNAL, PRACTICE BOMB, Mk 6 Mod 0



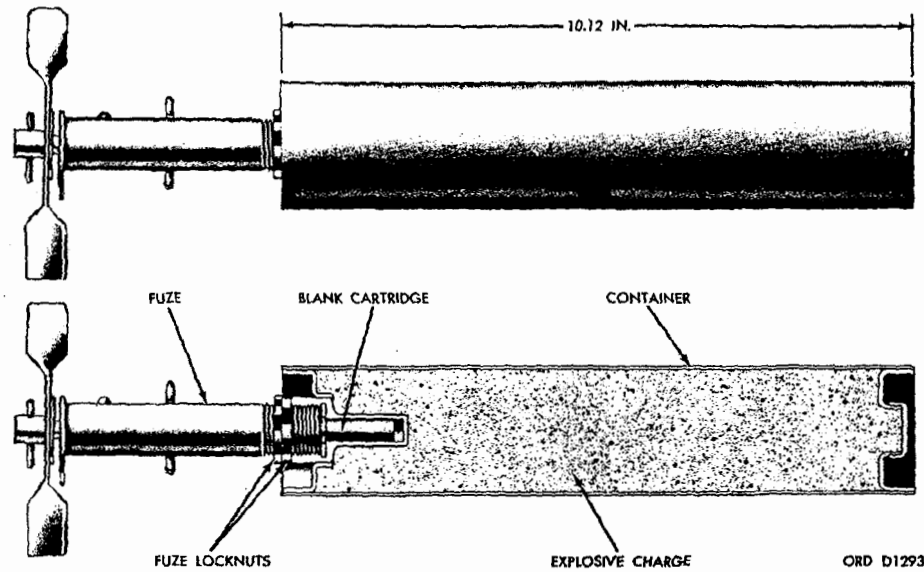
Description. Practice bomb signal Mk 6 Mod 0 consists of a can of black powder fitted with inert fuze AN-Mk 247 Mod 0 and a blank .38-caliber cartridge used as a detonator. The signal is used with practice bombs for observation of bombing accuracy. The Mk 6 is generally the same as the Mk 7 signal except that the fuze is mounted off-center in the Mk 6 and the black-powder filling weighs about 1 pound more.

Functioning. Upon release of the bomb from the aircraft, the arming wire is withdrawn, permitting the fuze-arming vane to rotate and arm the signal. Upon impact, the firing pin in the fuze over-comes a creep spring and impinges upon the primer of the blank cartridge, which in turn, ignites the black-powder charge. The resulting explosion produces a flash of light, and a large puff of gray smoke.

Length	8.0 in
Diameter	3.0 in
Weight of assembled signal	3.7 lbs
Container Material	Steel
Explosive Charge	Black Powder, 2.0 lbs

Reference: TM 9-1325-200, *Bombs and Bomb Components*, April 1966

SIGNAL, PRACTICE BOMB, Mk 7 Mod 0



Description. Practice bomb signal Mk 7 Mod 0 consists of a can of black powder fitted with inert fuze AN-Mk 247 Mod 0 and a blank .38-caliber cartridge used as a detonator. The signal is used with practice bombs for observation of bombing accuracy. The Mk 7 is generally the same as the Mk 6 signal except that the fuze is mounted off-center in the Mk 6 and its black-powder filling weighs about 1 pound more.

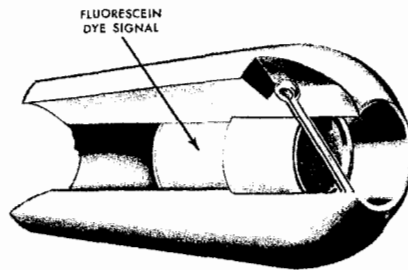
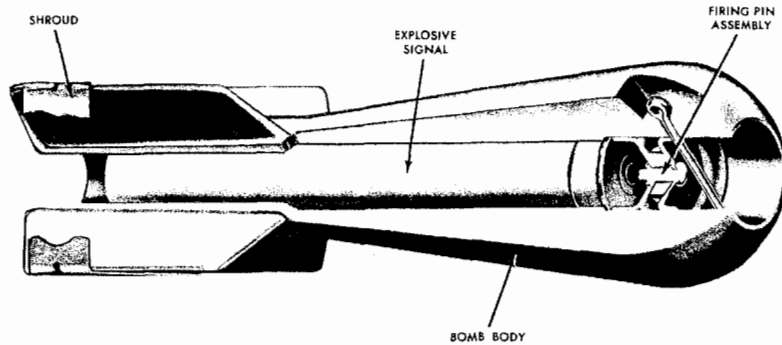
Functioning. Upon release of the bomb from the aircraft, the arming wire is withdrawn, permitting the fuze-arming vane to rotate and arm the signal. Upon impact, the firing pin in the fuze over-comes a creep spring and impinges upon the primer of the blank cartridge, which in turn, ignites the black-powder charge. The resulting explosion produces a flash of light, and a large puff of gray smoke.

Length	10.12 in
Diameter	2.0 in
Weight of assembled signal	2.5 lbs
Container Material	Steel
Explosive Charge	Black Powder, 1.0 lbs

Reference: TM 9-1325-200, *Bombs and Bomb Components*, April 1966

MINIATURE PRACTICE BOMBS

AN-Mk 5 Mod 1, AN-Mk 23, AN-Mk 43



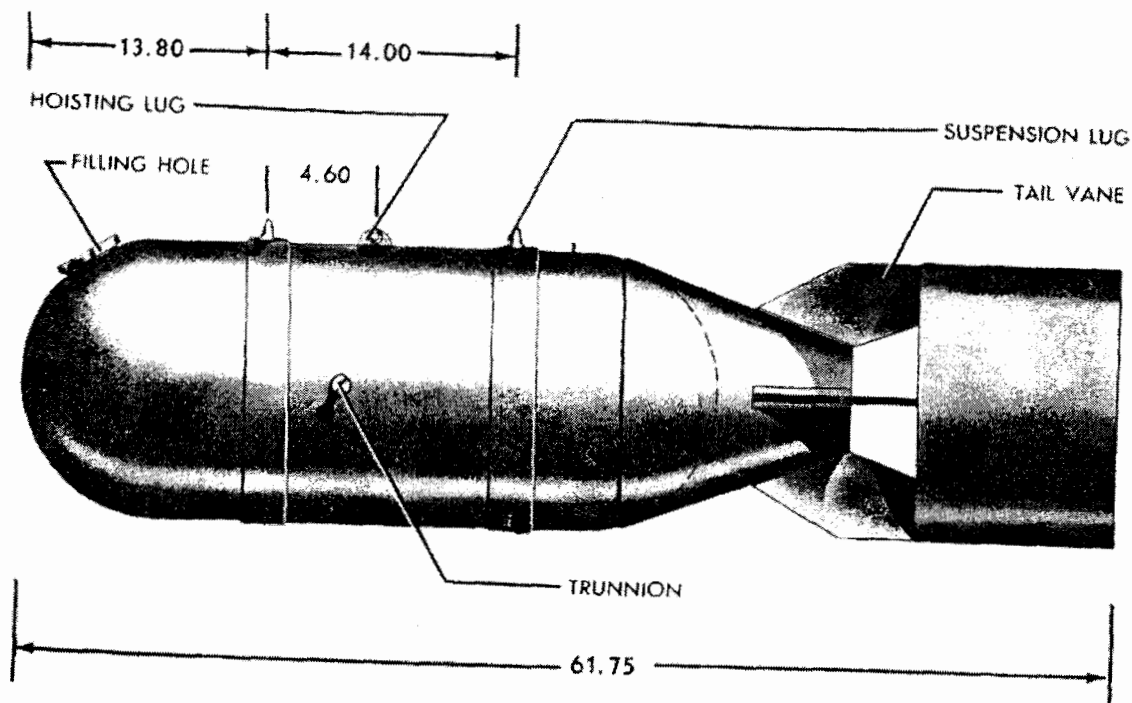
ORD D1160

Description. These bombs are used for low-altitude horizontal, or dive-bombing practice. The three bombs are similar in physical appearance, but differ basically in the metal used to cast the body. Bombs are used with the AN-Mk 4 practice bomb signal that is a blank 10-gauge shotgun shell (extended length). Signals contain a black powder expelling charge and a red phosphorous pyrotechnic mixture. These bombs also are used with the MK5 signal that contains a fluorescein dye and is actuated by impact on water. When the Mk5 signal is installed, the firing pin assembly is not used.

Over-all length	8.25 inches
Body Diameter	2.18 inches
Fin Dimension	2.5 inches
Weight	AN-Mk 5 Mod 1 - 2 lb. 11 oz. \pm 1 oz
	AN-Mk 23 - 3 lb. \pm 2 oz
	AN-Mk 43 - 4 lb. 7 oz. \pm 2 oz.
Signal	AN-Mk 4, Black powder/pyro- Technic charge Mk 5, Fluorescein dye

Reference: OP 1280, *Aircraft Bombs*, February 1945; TM 9-1325-200, *Bombs and Bomb Components*, April 1966

BOMB, PRACTICE, 500-POUND, MK 5, MK15 AND MK 21



Use. This bomb is used for all types of bombing practice, except that it may not be used against armored deck target boats.

Description. The bomb body is made of welded steel sheet metal. Bombs are complete as shipped, except for the loading of the inert charge of water or wet sand. Anti-freeze could be added to prevent freezing. A filler hole is provided at or near the nose for loading. Neither fuzes nor spotting charges are provided for this bomb. If an arming wire was desired for use with the bomb for training purposes, a small washer could be soldered to the bomb nose. The bomb is equipped with trunnions for dive-bombing and may be suspended only from double-hook bomb racks or shackles, or in slings. The Mark 11 and 21 bombs are nearly identical, while the Mark 5 is longer and slightly larger in diameter.

Over-all length	61.75 inches
Body diameter	15.0 inches
Fin dimension	15.0 inches
Weight	
Empty	58.0 pounds
Water filled	273 pounds
Wet-Sand filled	500 pounds

Reference: OP 1280, *Aircraft Bombs*, February 1945

BOMB, PRACTICE, 100-POUND, MK15

TM 9-1325-200/NAVWEPS OP 3530/TO 11-1-28, April 1966

2-52. Bomb, Practice: 100-Pound, MK15 Mods 2, 3 and 4

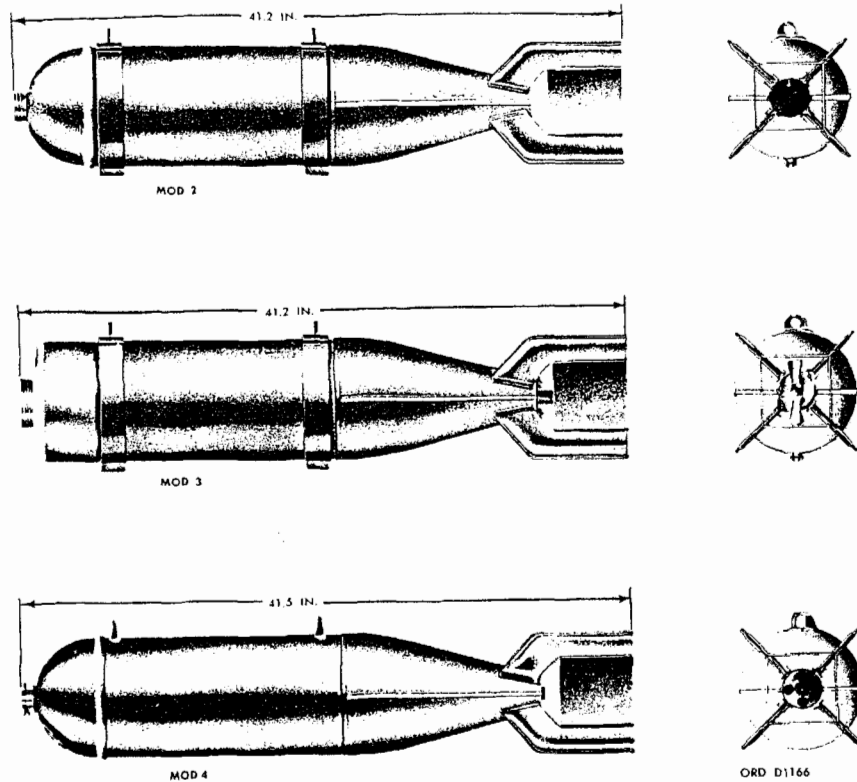


Figure 2-62. Bomb, practice: 100-pound, MK15 Mods 2, 3, and 4.

Table 2-50. Bomb, Practice: 100 pound, MK15 Mods 2, 3, and 4

Mark Mod	15 2	15 3	15 4
Length of Assembled bomb (in)...	41.2.....	41.2.....	41.5
Diameter of Body (in).....	8.0.....	8.0.....	8.0
Fin Span (in).....	11.24.....	11.24.....	11.24
Weight of Assembled Bomb (lb):			
Loaded with Wet Sand.....	100.0.....	100.0.....	97.0
Loaded with Water.....	56.0.....	67.0.....	60.0

Table 2-50. Bomb, Practice: 100 pound MK15 Mods 2, 3, and 4 - Continued

Mark Mod	15 2	15 3	15 4
Wet Sand Filler (lb).....	76.0.....	77.4.....	76.0
Water Filler (lb).....	39.0.....	40.0.....	39.0
Water Filler (gal).....	4.6.....	4.7.....	4.6
Signal.....	None.....	MK 7 Mod 0.....	MK 4 Mods 0,1,2,3,4
Fuze.....	None.....	MK 247 Mod 0.....	None
Firing-Pin Assembly.....	None.....	None.....	MK 1 Mod 0
Arming-Wire Assembly.....	MK 1 or AN-M6A2	MK 1 or AN-M6A2	No Arming Wire

a. *Description.* Practice bomb MK15 Mod 2 (fig. 2-62 and table 2-50) is identical to the Mod 3 except that it is not adapted for the use of a fuze and signal. It is filled with water or a mixture of sand and water (fig. 2-63) for spotting purposes. For training purposes, a small washer may be soldered to the nose of the bomb to simulate a fuze. The end of an arming wire (which is normally inserted in the fuze of service type bombs) is then secured to the washer. For armed releases, the washer is torn free of the bomb by the arming wire; for safe releases, the arming wire remains secured to the washer. When used against armored-deck target boats, it is filled with water and released from an altitude of less than 7,000 feet.

b. *Bomb, Practice: MK 15 Mod 3.* Practice bomb MK15 Mod 3 has a light cased, cylindrical body with a threaded filling hole in its rounded nose. A box-fin assembly consisting of four metal vanes attached to a cone is welded to the aft end of the body. The bomb has two metal suspension band assemblies (each consisting of a circular clamp, a suspension lug, and two cap screws) for tightening the band to the bomb. The bands may be adjusted for double suspension of the bomb by orienting to suit the rack or shackle to which the bomb is to be attached. A flat nose attachment that reduces ricochet of the bomb at entrance angles as low as 90 degrees is used during antisubmarine practice. The attachment is secured in place by a cap which threads onto the filling hose. The bomb is used with practice bomb signal MK7 Mod 0 and inert fuze MK247 Mod 0, both of which are secured to the aft end

of the bomb.

c. *Bomb, Practice, 100-pound: MK15 Mod 4.* The practice bomb MK15 Mod 4 is a light-cased, cylindrical bomb with a round nose and an integral box fin and cone. A flash tube, extending throughout its transverse axis, housed a pyrotechnic signal and firing-pin assembly. Two suspension lugs are welded to the bomb body 14 inches apart. A filling hole is located off center on the bomb nose and is sealed by a filler cap similar to those used on automobile gas tanks. The firing-pin assembly consists of two shallow metal cups, separated by a spacer which housed the firing pin. A cotter-pin through the nose end of the flash tube and two recesses in the lip of the forward cup locks the firing-pin assembly and signal in place.

d. *Functioning.* Upon impact of the bomb with the target, the signal is detonated, producing a flash and a large puff of smoke, which permits observation of the bombing accuracy.

ORDNANCE AND EXPLOSIVES
ARCHIVES SEARCH REPORT
FOR
VERNALIS DIVE BOMB AND ROCKET RANGE NUMBER 7
STANISLAUS, COUNTY, CALIFORNIA
PROJECT NUMBER JO9CA107401

APPENDIX E

REPORTS AND STUDIES

APPENDIX E

Reports and Studies

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- E-1 INPR Findings of Fact for project JO9CA107401 (B-4).
- E-2 INPR Site Survey Summary Sheet JO9CA107401 (B-4).
- E-3 INPR Project Summary Sheet JO9CA107401 (B-4).
- E-4 Climate data for western Stanislaus County Table 1 (B-28)
- E-5 Climate data for western Stanislaus County Tables 2 and 3 (B-28)

DEFENSE ENVIRONMENTAL RESTORATION PROGRAM
FORMERLY USED DEFENSE SITES
FINDINGS AND DETERMINATION OF ELIGIBILITY

STANISLAUS BOMBING TARGET
STANISLAUS COUNTY, CALIFORNIA
DERP-FUDS SITE NO. J09CA1074

FINDINGS OF FACT

1. The DoD acquired a leasehold interest in the property for Stanislaus Bombing Target, also known as Crows Landing Target No. 7, in 1943 under Lease Nos. NOy(R)-35285 and NOy(R)-35532. The property consisted of approximately 640 acres in Stanislaus County.
2. While information regarding the specific use of the target area was not located, it is known that NAAS, Crows Landing used the target and they were charged with the responsibility of providing a facility to support gunnery, bombing and field carrier landing practice for fleet air groups and squadrons based at NAS, Moffett Field and NAS, Alameda. NAAS, Crows Landing was established on May 25, 1943, inactivated on December 15, 1946, and reactivated on September 11, 1951.
3. Crows Landing Target No. 7 is included on a list of targets available for immediate release as of January 1946, and is listed as being no longer needed as of February 2, 1946. According to a report on the Status of Facilities as of February 15, 1947, the lease for Facility No. 7, Crows Landing was terminated by the Commandant of the Twelfth Naval District effective approximately May 15, 1946. The status of the target was listed as surplus and there is no record of reactivation.

DETERMINATION

Based on the foregoing findings of fact, the site has been determined to be formerly used by DoD. It is therefore eligible for the Defense Environmental Restoration Program - Formerly Used Defense Sites established under 10 USC 2701 et seq.

21 Sep 99

DATE

Peter T. Madsen Col 504
PETER T. MADSEN
COLONEL (P), U.S. ARMY
COMMANDING

**SITE SURVEY SUMMARY SHEET
FOR
DERP-FUDS SITE NO. J09CA1074
STANISLAUS BOMBING TARGET
STANISLAUS COUNTY, CALIFORNIA**

SITE NAME(S): The Stanislaus Bombing Target site, was known as Target No. 9 and Crows Landing Target No. 7. The majority of the area is now used for grazing cattle. A small portion in the northeastern quarter has become part of Interstate Highway 5.

LOCATION: The Stanislaus Bombing Target, also known as Target No. 9 and Crows Landing Target No. 7, is located in Stanislaus County, California approximately 2.5 miles southwest of Patterson, and 90 miles south of Sacramento (Figure 1). The site is comprised of 640 acres situated at latitude 37° 26' and longitude 121° 10' and the northeast corner is bisected by Interstate 5. The area consists of rolling hills covered with long grass. NAAS, Crows Landing is located approximately 3 miles southeast of the target area and the site of former NAAS, Vernalis is located 15 miles northeast of the target area.

SITE HISTORY: On June 12, 1943, the DoD began condemnation proceedings, pursuant to the request of the Acting Secretary of the Navy, to acquire 640 acres from Minnie Hansen and the Cox Estate. The Complaint filed in Civil No. 4703 states that the Navy selected the property for use as a site for a dive bombing target in connection with Crows Landing Outlying Field, Stanislaus County. The DoD initially sought the exclusive use and occupancy of the property for the period ending June 30, 1944, subject to easements for existing pipe lines and public utilities (SB0960).

This condemnation action was dismissed on January 24, 1944 (SB0959). The property was then acquired under Lease Nos. NOy(R)-35285 and NOy(R)-35532 and referenced as Target No. 9 (SB0794, SB0793). It is unclear if the target was originally designated as Target No. 9 and the name was later changed to Target No. 7 or if the use of Target No. 9 was incorrect from the beginning. Although several documents refer to the site as Target No. 9, correspondence dated February 2, 1946 states that Target No. 7 Crows Landing was listed incorrectly as Target No. 9 in a previous letter (SB0793).

While information regarding the specific use of the target area was not located, it is known that NAAS, Crows Landing used the target and they were charged with the responsibility of providing a facility to support gunnery, bombing and field carrier landing practice for fleet air groups and squadrons based at NAS, Moffett Field and NAS, Alameda. NAAS, Crows Landing was established on May 25, 1943, inactivated on December 15, 1946, and reactivated on September 11, 1951 (SB0521).

It appears that after the reactivation of NAAS, Crows Landing, the DoD was interested in reactivating this target area. A February 9, 1951, letter requests the acquisition of fee title of the same 640 acre target area

used during World War II. The letter states that the additional land is required to provide bombing targets to meet the training requirements for Fleet aircraft. Planned assignments of aircraft squadrons to activities of the Twelfth Naval District make it essential that adequate training facilities be available (SB0098).

This request to reactivate the target area was vigorously opposed by property owners in the vicinity. They claimed that the site was located in good grazing land which provided excellent cattle and sheep feed during the spring of the year. In addition, the grass became tinder dry in the summer and fall months creating a potential fire hazard. It was reported that many fires were started by Navy operations during the targets previous use (SB0096).

Crows Landing Target No. 7 is included on a list of targets available for immediate release as of January 1946, and is listed as being no longer needed as of February 2, 1946 (SB0802). According to a report on the Status of Facilities as of February 15, 1947, the lease for Facility No. 7, Crows Landing was terminated by the Commandant of the Twelfth Naval District effective approximately May 15, 1946. The status of the target was listed as surplus (SB0106). It does not appear that the 1951 request for reactivation, as mentioned above, was ever granted.

SITE VISIT: On July 9, 1999, Sarah Howe and Cheryl Mahoney of TechLaw conducted a site visit of the former target area. The main objectives of the site visit were to verify the reported evidence of DoD activity in the area and to document the current status of the site. The site visit yielded the following information:

The site was reached by exiting from Interstate Highway 5 at the Crows Landing exit and driving north on Ward Avenue to Oak Flat Road and proceeding west for approximately 2 miles. The property encompassing the site is bordered by Oak Flat Road to the south and much of the former target area was visible from the road. Adjacent to the property was a house, a barn and a small pasture area (Photograph 9). On the opposite side of the road was a small house surrounded by an orchard and what appeared to be some type of processing area, which consisted of posts holding up a metal roof and an attached storage shed. Several large trucks were parked nearby.

The weather on the day of the site visit was sunny and hot with a slight breeze. The ground was dry and cracked and the grass covering the property was approximately one foot high and very dry. Access to the site was approved by Mr. Stanley Cox who operates the ranch which uses the property. Mr. Cox warned of the very high fire danger and would not allow vehicles on the property. Entrance was gained by climbing through the barbed wire fence which enclosed the property.

A double row of electrical towers running diagonally through the property was used as a guide to locating the target area (Photograph 7). The project team began climbing the first hill to obtain an overview of the property. At the time of the site visit there were approximately 20 cows grazing in the former target area and they seemed to be slightly agitated by the presence of the project team (Photograph 4). The project team's path was changed to proceed west along the base of the hill before beginning to again climb to the top. Interstate 5 and a vista site with several large trucks was visible from the hill (Photograph 1).

No ordnance were visible in the area traversed during the site visit. Mr. Cox had stated that much of the area had been cleaned by the DoD and no fragments had been found at the site in recent years. As the area was used for dive bombing, practice bombs may have traveled several feet under ground and not yet have surfaced.

CURRENT USE OF THE SITE: The former site is now used for grazing cattle. The area is enclosed by a barbed wire fence.

CATEGORY OF HAZARD: OE

PROJECT DESCRIPTION: There is one potential project at this site.

- a. OE. The area was used as a bombing target and fragments of ordnance may remain.

AVAILABLE STUDIES AND REPORTS: Limited information was available from the various document repositories. A list of references is attached.

POC: Bill Mullery, U.S. Army Corps of Engineers, Sacramento District, (916) 555-6944.

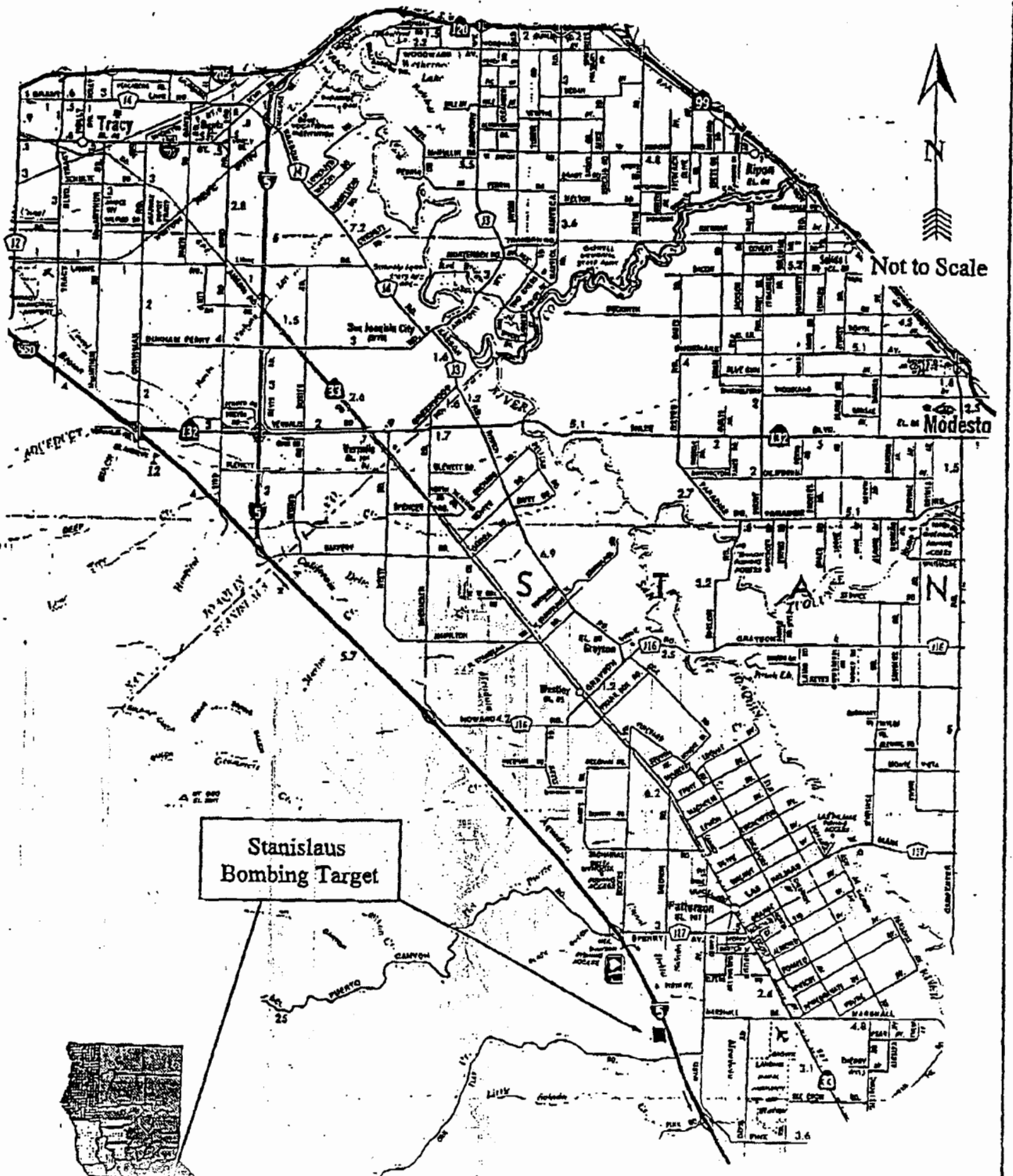


Figure 1

LEGEND

MAP DEPICTING
SITE LOCATION

SOURCE: California State Automobile Association

PROJECT SUMMARY SHEET
FOR
DERP-FUDS OE PROJECT NO. J09CA107401 ^{CD}
STANISLAUS BOMBING TARGET
STANISLAUS COUNTY, CALIFORNIA

PROJECT DESCRIPTION: The site was used during World War II as a dive bombing target. It is not known at this time if the site was cleared after the war.

PROJECT ELIGIBILITY: DoD acquired a leasehold interest in the target during 1943 and retained this lease until approximately 1946. The property was used as a dive bombing practice target under NAAS, Crows Landing during World War II. It is now privately owned.

11.03 **POLICY CONSIDERATIONS:** There are no policy considerations which affect this project.

PROPOSED PROJECT: This site should be further evaluated for unexploded ordnance and should be referred to CEHND for recommendations on further action.

RAC FORM: Attached.

POC: Mr. Bill Mullery, U.S. Army Corps of Engineers, Sacramento District, (916) 557-6944.

Table 1.--Temperature and Precipitation

(Recorded in the period 1961-90 at: Newman, CA6168)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have--		Average number of growing degree days*	2 years in 10 will have--			Average number of days with 0.10 inch or more	Average snowfall
				Maximum temperature higher than--	Minimum temperature lower than--		Less than--	More than--	In		
OF	OF	OF	OF	OF	Units	In	In	In	In		
January-----	54.5	35.6	45.1	69	21	171	2.24	0.82	3.42	4	0.0
February-----	62.6	39.1	50.9	76	26	306	1.74	0.48	2.85	4	0.0
March-----	68.1	41.3	54.7	83	29	450	1.46	0.60	2.39	4	0.0
April-----	75.2	44.0	59.6	94	33	588	0.80	0.22	1.42	2	0.0
May-----	84.0	49.5	66.8	103	38	830	0.16	0.06	0.51	0	0.0
June-----	91.7	55.2	73.5	107	43	1003	0.06	0.10	0.31	0	0.0
July-----	96.3	58.6	77.5	108	48	1161	0.03	0.10	0.25	0	0.0
August-----	94.2	58.0	76.1	106	48	1118	0.04	0.07	0.30	0	0.0
September---	89.2	54.3	71.8	103	44	953	0.29	0.11	1.07	0	0.0
October-----	80.4	48.2	64.3	96	35	744	0.52	0.27	1.05	1	0.0
November-----	65.2	40.6	52.9	81	27	383	1.68	0.55	2.95	4	0.0
December-----	54.9	35.4	45.1	69	21	174	1.51	0.48	2.45	4	0.0
Yearly:											
Average---	76.4	46.6	61.5	---	---	---	---	---	---	---	---
Extreme---	112	15	---	109	20	---	---	---	---	---	---
Total-----	---	---	---	---	---	7881	10.53	6.94	13.15	23	0.0

E-4

Table 2.--Freeze Dates in Spring and Fall

(Recorded in the period 1961-90 at: Newman, CA6168)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	February 3	February 21	April 10
2 year in 10 later than--	January 23	February 11	March 30
5 year in 10 later than--	December 18	January 17	March 8
First freezing temperature in fall:			
1 yr in 10 earlier than--	December 9	November 12	November 7
2 yr in 10 earlier than--	December 16	November 21	November 11
5 yr in 10 earlier than--	January 1	December 17	November 21

Table 3.--Growing Season

(Recorded for the period 1961-90 at: Newman, CA6168)

Probability	Daily Minimum Temperature During growing season		
	Higher than 24 °F	Higher than 28 °F	Higher than 32 °F
	Days	Days	Days
9 years in 10	317	264	213
8 years in 10	338	279	228
5 years in 10	> 365	307	256
2 years in 10	> 365	335	285
1 year in 10	> 365	350	300

ORDNANCE AND EXPLOSIVES
ARCHIVES SEARCH REPORT
FOR
STANISLAUS BOMBING TARGET
STANISLAUS COUNTY, CALIFORNIA
PROJECT NUMBER JO9CA107401

APPENDIX F

LETTERS/MEMORANDUMS/MISCELLANEOUS ITEMS

APPENDIX F

Letters/Memorandums/Miscellaneous Items

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- F-2 *Board Report, Inspection and Review of Progress at Naval Air Station, Alameda, California (B-12).*
- F-3 *Request for Land Target Area in Vicinity of NAAS, Crows Landing, California (B-13).*
- F-4 *Real Estate Activity Concerning Air Facilities (B-14).*
- F-5 *History, June 1945 (B-15).*
- F-6 *War History, June to September 1945 (B-16).*
- F-7 *Organization Chart, Naval Air Bases (B-17).*
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- F-9 *Target List (B-19.)*
- F-10 *Facilities in Excess of Post-War Aviation Requirements (B-20).*
- F-11 *Reduction in status of NAAS Crows Landing, California (B-21).*
- F-12 *Naval Air Bases, Twelfth Naval District (B-22).*
- F-13 *Bombing Target List Naval Air Bases, Twelfth Naval District (B-23).*
- F-14 *Species List for Stanislaus County, California (B-24).*

Subject: Naval Air Center, Alameda.

In addition to the above proposed projects, the taxiways should be increased in width from 50' to 75', and the Board has requested the District Public Works Officer to forward estimates to the Bureau covering the additional cost of this work.

The North - South runway (150' x 7000') is complete with the exception of a 150' strip at the intersection of the East - West runway. The District Public Works Officer was requested to complete this portion immediately and to expedite the removal of the windmill, and the power and telephone lines at the south end of the runway, so that this runway would be usable.

(B) Vernalis.

This field now has one runway 500' wide which is being extended to a length of 7000'. There is some question as to the wheel load which this runway will support, but the District Public Works Officer is of the opinion that it will be adequate for operation of heavy bombers with adequate maintenance, and recommends that operations be carried on for several months before making a final decision. This runway is in the direction of the prevailing wind, but data obtained over a period of four months indicates that there will be East - West winds for an approximate average of 30% of the time. Under date of March 19, 1943, the Commandant, Naval Air Center, Alameda, requested the installation of an East - West runway 300' by 4000', and for a 50' taxiway, but at that time heavy bombers were not considered in the design. Commander Fleet Air, Alameda, therefore strongly recommends that this new East - West runway be revised to 200' by 5000', with wheel loadings satisfactory for heavy bombers. New taxiways 75' wide, designed for heavy bombers, will also be required, connecting the ends of the runways with the warming-up apron, as indicated on attached sketch. The District Public Works Officer has been requested to forward to the Bureau necessary plans and estimates for this work.

(C) Crows Landing.

This field is to be used for heavy bombers. There are two concrete runways (150' x 7000') with 50' taxiways, full length, that are just being completed at this location. The wheel loadings are adequate, but the runways should be widened from 150' to 200', with 50' shoulders, and the taxiways from 50' to 75', with 10' shoulders. The Commandant, Naval Air Center, has already recommended in his letter of March 19, 1943, to the Bureau, that the additional 50' width in the runways and the 50' stabilized

Subject: Naval Air Center, Alameda.

shoulders on each side, and the 10' stabilized shoulders on each taxiway be provided, at a total estimated cost of \$642,000, including the relocation of the side ditches. The District Public Works Officer has been requested to forward estimates to the Bureau covering the additional cost of widening the taxiways from 50' to 75', as shown on the attached sketch.

(D) Gunnery Areas.

Data concerning the acquisition of gunnery areas has been forwarded to the Bureau of Aeronautics some time back and Commander Fleet Air has requested that immediate action be taken to acquire this land. So far the station has not been informed as to the action taken in regard to this matter.

(E) Magazines.

The Naval Air Station is still uninformed as to the number, size, and location of magazines required in all fields, including those for Sea Frontier Bases: Crescent City, Eureka, and Santa Maria.

(F) Target Ranges.

Data for leasing target sites at Crows Landing, Vernalis, Hollister, and Lovelock has been forwarded by the Commandant, Naval Air Center, to the Bureau, under dates of December 9, 1942, March 31, 1943, March 23, 1943, and April 30, 1943, respectively. The Center has not been informed of the action being taken and requests that this matter be expedited.

2. There are many other things that the Board will cover in its final report, but the above are the projects which are considered urgent for the operation of B-24 bombers.


I. M. McQUISTON.

cc: Commander, Fleet Air, Alameda.
Commandant, Naval Air Center, Alameda.
Commander Perkins, BuAer.
Assistant Chief, BuAer.
Commander F. A. Zunino, BuAer.
Commander S.T. Barker, BuDecks

Inspection and Review of Progress at Naval Air Center,
Alameda, California.

to permit continuance of construction of these stands at an early date. Plans for the addition to B.O.Q. messhall, which was authorized January 8, 1943, were not approved by the various cognizant station authorities until just recently and completion is not expected before July 1943. Practically the same situation obtains for the ~~MR~~ shop extension.

(d) Delay in acquisition of land.

The acquisition of land at various locations has taken a considerable amount of time and has resulted in delays in completing development. Information on the land in question was obtained by the Board and is given briefly below.

(1) Land for building site at Watsonville (35 acres)

Acquisition of this land was requested by letter from the Commanding Officer dated December 9, 1942. The Bureau of Aeronautics forwarded information to the Bureau of Yards and Docks on 12 April 1943. Final action has not yet been taken.

(2) Crows Landing Bombing Target

Acquisition of leasehold interest in this target site was requested by Commanding Officer's letter of March 29, 1943. The Bureau of Aeronautics forwarded this letter to the Bureau of Yards and Docks for action on May 24, 1943.

(3) Vernalis Bombing Target Site

Acquisition of leasehold interest in this target site was requested by the Commanding Officer by letter dated March 31, 1943. The Bureau of Aeronautics forwarded to the Bureau of Yards and Docks for action on June 2, 1943.

(4) Hollister Bombing Target Site

Acquisition of leasehold interest in this target site was requested by letter from Commanding Officer dated March 23, 1943. No action has yet been taken.

(e) The need for additional projects not yet authorized.

There are a number of additional projects required in order for the Naval Air Center to perform its function efficiently. Some of these projects were recommended by the Board in its previous report, reference (b). Others are new projects the need for which has now become clearly evident. All are listed below with appropriate comments.

NA 27/N-1-13

NAV. PERS
ORD.
AERO.
BUSHIPS
Y & D
S & A
M & S
J.A.G.
M.G.C.
BUDGET

OP 20-20H4-jc 9/26/44
SO 8 21 52
Serial 1254030

End-3 on NAC, Alameda ltr to BuAer via ComTwelve
AC/NA27-30H, AC/H2-14, AC/NI-9(C.L.), dated
5 August 1944.

(116)

COMINCH

28 AUG 1944

OP. 01

OP. 02

OP. 03

From: CNO
To : BuDocks

OP. 05

OP. 05-E

OP. 05-G

Subj: Land Target Area in Vicinity of NAAS, Crows Landing,
California - Request for

Ref : (a) General Order 13B.

OP. 12

OP. 13

OP. 16

OP. 17

1. Forwarded, approved in accordance with ref. (a) as to
the military features of the site involved. This approval
does not extend to the legality of the acquisition procedures
nor the propriety of the price to be paid.

OP. 19

OP. 20

OP. 21

2. It is noted in the first endorsement that it will not
be necessary for the easement along the west boundary line
of the property covering a right-of-way for power lines to be
removed or purchased.

OP. 23

OP. 28

OP. 29

OP. 30

OP. 31

OP. 32

OP. 33

OP. 34

OP. 35

OP. 36

OP. 37

3. It is noted further (Para. 6, End-2) that use of the
subject property will not require additional Naval personnel
other than that already assigned to NAAS, Alameda, California.

OP. 39

4. Attention is invited to the request in the basic letter
and the first endorsement for expeditious action.

T. B. Thompson
By direction

CC: ComTwelve
NAC, Alameda
NAS, Alameda
ComPair, Alameda
NAAS, Crows Landing

AUG 20 11 PM

OP. 50-A
OP. 50-B
OP. 50-C
OP. 50-D
OP. 50-E
INSP. GEN.



80-Cy

Se

21 November 1944

MEMORANDUM FOR DISTRICT PUBLIC WORKS OFFICER

Subject: Real Estate Activity Concerning Air Facilities

Enclosure: (A) Information concerning Airfields and Flight Strips and Gunnery and Target Areas.
(B) Confidential
(C) Maps

Administrative not included
1. A memorandum concerning information on all air facilities was requested.

2. Enclosure (A) contains a summary of information on land acquisition and Real Estate processing on the following:

1. Auxiliary Air Stations, Airports, and Flight Strips. ← Encl A-1
2. Aerial Gunnery Ranges and Target Areas ← Encl A-2
3. The markers used on Fallon Aerial Gunnery Range and the markers proposed for the Lovelock Aerial Gunnery Range by the ROinCC at Fallon. ← Encl A-3 ← Encl A-3-a

3. Enclosure (B) contains information which has been classified as confidential. It is believed that a portion of this material has been treated as non-classified prior to the latest correspondence, but in view of the latest correspondence being classified it is submitted in that form.

4. Enclosure (C) contains maps referred to in Enclosure (A).

ALBERT LEE STEPHENS, JR.

NAAS, CONCORD (Cont.)

A fully executed revocable permit to connect electrical wires to 2 poles of the Pacific Gas and Electric Company was transmitted to the permitter on 18 August 1944.

Avigation easements were executed and forwarded to the grantor on 7 February 1944.

5. COTATI, NAAS

143.4 acres of land were acquired in fee by condemnation.

74.86 acres of additional land was acquired in fee by condemnation.

A power line constituting a navigation hazard was relocated.

A permit to install obstruction lights was forwarded to BuDocks 27 September 1944.

Gunnery area under Petaluma.

6. CRESCENT CITY - DEL Norte COUNTY AIRPORT

Navy OAA Lease form executed by the lesser and sent to BuDocks 18 September 1944.

CNO to BuDocks 9 November 1944 approved lease. Execution on behalf of the Government pending.

7. CROWS LANDING, NAAS

.06417 acres of land were acquired by condemnation for water supply wells and right of way for pipe line.

800 acres were acquired in fee.

Bombing targets in connection with Crows Landing are found under the following names:

Crows Landing
Gustine
Madera

8. EUREKA LIGHTER THAN AIR BASE, HUMBOLDT COUNTY AIRPORT

478.24 acres of land acquired in fee by condemnation.

30 additional acres leased (Lease NOy(R)-32657)

AERIAL GUNNERY RANGES AND TARGET AREAS

1. ANTIOCH DIVE BOMBING TARGET SITE

Lease NOy(R)35540. 502.25 acres.

Exchange of land by revocable permits between California Feat Company and the Government.

Permits executed and transmitted to permitors 22 September 1944.

2. BIG LAGOON AND SOUTH HUMBOLDT BAY ROCKET RANGES (NAAS ARCATA)

494.54 acres leasehold condemned.
Targets constructed and in operation.

Note: See confidential on So. Humboldt Bay.

3. CASTROVILLE DIVE BOMBING TARGET SITE (NAAS ALAMEDA)

BuDocks prepared draft of lease and forwarded same to Commandant Naval Air Center Alameda on 29 April 1944. No further record of negotiations contained in our files.

4. CROWS LANDING DIVE BOMBING TARGET SITE (NAAS CROWS LANDING)

Lease NOy(R)-35532 - 480 acres
Lease NOy(R)-35285 - 160 acres
Total 640 acres.

Fully executed and transmitted to lessors.

5. FALLON AERIAL GUNNERY RANGE (NAAS FALLON)

700,000 acres more or less.

Lease hold interest acquired by condemnation. Area delineated upon map 3.

This area is used for aerial gunnery, strafing, dive bombing, rocket fire, and it is now proposed to use the area for dropping live bombs. Cattle have been excluded from the area, but have drifted on and in some instances the owners have made no attempt to prevent them from straying upon the range.

The general course of aerial gunnery runs is delineated upon the map in a broken red line. The planes enter from the south part of the west range and fly in the direction indicated by the arrows. There is a short course from east to west on the north part of the east range. The location and extent of the run is not known. It is shown upon the map with short dashes and a question mark.

By August 1944, the aircraft repair and overhaul facilities had been increased from class "D" to class "C". The station supervises the procurement and installation of shop equipment which is manned by Fleet Air servicing unit personnel. Major overhaul is done at Naval Air Station, Alameda.

Fire-fighting equipment includes a Seagrave Quadruple combination fire apparatus, a Cardox crash-fire truck, and two crash-fire trucks. A mutual aid plan for fires on the station or on the bombing target areas has been established in conjunction with the Stanislaus County Firemen's Association. Illustrated lectures and meetings are arranged with the civilian fire protection authorities where ideas and plans can be exchanged. Under the general jurisdiction of the Security Officer, NAS, Alameda, practices as outlined by the National Fire Protection Association, in addition to Navy practices and directives, are followed.

On 13 July 1944 the administration of the station was changed from "Officer-in-Charge" to "Commanding Officer". Prior to this time all personnel records were carried and administered by NAS, Alameda. This work was now taken over by the station. In October a personnel officer reported aboard to assist in establishing complete personnel administration facilities. During this period the procedure in assigning Fleet Air personnel based aboard to temporary duty with various departments of the station in accordance with Chief of Naval Operations directives was clarified and further advanced.

The percentage of civilian personnel employed on the station has been steadily increasing. During the first quarter of 1945 civilian employment increased 66 per cent. Extensive efforts are being made to employ civilians to replace and supplement naval personnel in Transportation, Ship's Service, Supply, and other departments.

Two pre-fabricated huts containing 3-A-2, Panoramic and Link Trainer devices were set up on the station by December 1943. Aircrews were sent to NAS, Alameda for other refresher ground training. On the 25th of August 1944, the mobile ground training unit, NAMT(D)-105 arrived. By 14 September 1944, a training program had been established in Navigation and Loran. Instruction is being expanded to include all phases of Loran, Radar, Celestial and "DR" refresher training. Emphasis is placed on actual flying instruction with squadron training planes.

A 100-man trainer building and equipment was scheduled to be completed by September 1944, but was not in operation due to construction and equipment installation difficulties until the latter part of January 1945. A complete refresher ground training program for combat aircrews had been set up in this department. The most up-to-date developments taken from combat experiences are incorporated in this program for the advanced training of aircrews.

Three practice bombing target areas are maintained by the station. The first is a dive and glide bombing target comprising 640 acres, 500 feet high in the foothills, 3-1/2 miles southwest of the station. Construction on this target began in July 1943 and was completed on 4 September 1943. The second target is for radar bombing. It consists of 510 acres located on flat grazing land 9 miles southeast of the station. The Chief of Naval Operations approved the leasing of this area on 28 August 1944, and the target was ready for use by 1 January 1945.

WAR HISTORY,
U. S. NAVAL AUXILIARY AIR STATION,
CROWS LANDING, CALIFORNIA,
FROM 1 JUNE 1945 TO 2 SEPTEMBER 1945.

COMMANDING OFFICER - COMMANDER FRANKLIN B. HOPKINS, U.S.N.

~~CONFIDENTIAL~~

On 13 June 1945 at 0915 PWT, an FM, Buno 16771, piloted by Harry Earl Kaufman, Ensign, USNR, of VC-77 operating from the Naval Air Station, Livermore, Calif., crashed into the foothills at bombing target number 7, three (3) miles northwest of this station, while practice bombing. The plane was a total loss and the pilot was instantly killed. No other personnel were aboard. Salvage operations were carried out by personnel and equipment from this station.

During the late spring and early summer months, numerous grass and small-brush fires were started adjacent to the bombing and aircraft gunnery targets at Madera and Gustine and at the target in the foothills three(3) miles northwest of the station. The grass by this time of the year has reached its maximum growth after the winter rains and with the beginning of the dry season is already parched by the sun. The target areas proper were burned off as soon as the vegetation would permit. Fire-fighting equipment and personnel from this station stood fire watch at each area during such operations. Liaison with the local and county fire fighting organizations and ranger stations was closely maintained. One fire which occurred 20 June in the vicinity of the Navy Bombing Target number 23, 8 miles southeast of Madera, Calif., destroyed 2,222 acres of grass and grain valued at approximately \$32,600 on the property of

CONFIDENTIAL

Appendix "A" to US NAAS, Crows Landing, Calif., War History.

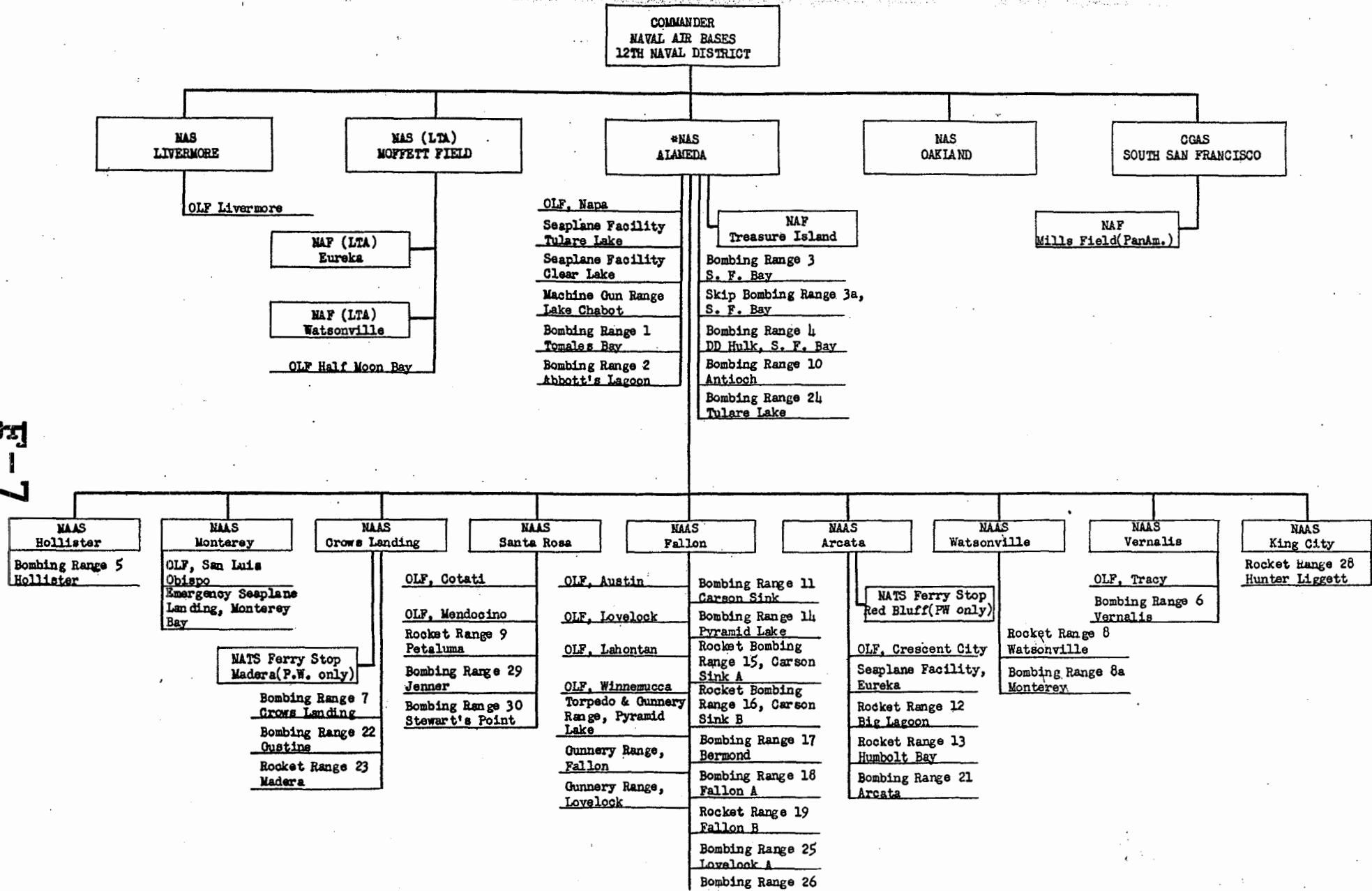
Chronological List of Fleet Air Units and Squadrons based at NAAS, Crows Landing, Calif., for Training and Servicing.

1945

VPB-115	Arrived 10 June 1945
VPB-122	Departed 10 June 1945
VPB-101	Departed 26 July 1945
CASU(B)#3	Arrived 29 July 1945
VR-11 Detachment VR-4	Departed 31 July 1945
VPB-198	Arrived 31 July 1945
VPB-103	Arrived 4 August 1945
VPB-115	Departed 11 August 1945
VPB-107	Arrived 15 August 1945
CASU(B)#4	Arrived 20 August 1945
VPB-103	Departed 22 August 1945
NAMT(A), PV-2, #254	Arrived 30 August 1945
NAMT(A), PB4Y-2, #152	Departed 1 September 1945

Appendix "A"

ORGANIZATION CHART, NAVAL AIR BASES, 12 N.D



E-7

UNITED STATES PACIFIC FLEET
FLEET AIR ALAMEDA

U.S. Naval Air Station,
Alameda, California,

8 Jan. 1946

From: Commander Fleet Air, Alameda.
To: Commander Naval Air Bases, TWELFTH Naval District.
Subject: Bombing Targets - dis-establishment of.
Reference: (a) ComFair Alameda ltr serial 01443 of 10
September 1945.

1. Reference (a) lists the estimated target requirements for post-war training in the Alameda area.

2. At this time it is advisable to list those targets which may be released immediately and those which should be retained temporarily or permanently. This list in no way impinges on the conclusions set forth in reference (a).

TARGETS AVAILABLE FOR IMMEDIATE RELEASE

- ✓ No. 3 in South San Francisco Bay, California.
- No. 5 at Hollister, California.
- No. 7 at Crows Landing, California.
- No. 17 at Bermond, Nevada.
- No. 19 at Fallon, Nevada.
- No. 20 at Schurs, Nevada.
- No. 25 at Lovelock, Nevada.
- No. 26 at Lovelock, Nevada.
- No. 27 at Lovelock, Nevada.
- No. 30 at Stewart's Point, California.

TARGETS FOR TEMPORARY RETENTION

- No. 6 at Vernalis, California.
- No. 10 at Antioch, California.
- No. 29 at Jenner, California.

TARGETS FOR PERMANENT RETENTION

- ✓ No. 1 at Tomales Bay, California.
- No. 2 at Abbot's Lagoon, California.
- ✓ No. 3A in South San Francisco Bay, California.
- No. 4 in South San Francisco Bay, California.
- No. 8 at Watsonville, California.
- No. 8A at Watsonville, California.
- No. 9 at Petaluma, California

Section II

BOMBING TARGETS

FACILITY	PRESENT STATUS	TITLE IN LAND	REM. RKS
			For retention list see Com'air Alameda ltr to COMB 12, dtd 20 May 1946.
No. 1 Tomales Bay	Retain	Permit	Public notice by War Dept. dtd 4 June 41, creating danger zone.
No. 2 Abbotts' Lagoon	Retain	Permit	Revocable permit from State expires 4 Apr 1951.
No. 3 San Mateo Bridge	Surplus	Permit	Circular water borne target; release recommended to BuDocks.
No. 3A So. S. F. Bay	Retain	Permit	Army Permit dtd 28 July 1943.
No. 4 So. S. F. Bay	Retain	Permit	D D Hulk which replaced circular target.
No. 5 Hollister	Surplus	Leased	Lease terminated by Com12 effective 30 June 46, per ltr to BuDocks, dtd 22 May 1946.
No. 6 Vernalis	Surplus	Leased	Lease being terminated by Com12, see Com12 ltr of 5 Dec 46 to lessors.
No. 7 Crows Landing	Surplus	Leased	Leases terminated by Com12 effective approx. 15 May 46, per Com12 ltr, ser 43521, of 4 Oct 46, to BuDocks.
No. 8 Watsonville	Retain	Owned	On Navy-owned land of Naval Radio Station under Mare Island.
No. 8A Watsonville	Retain	Permit	Army permit; water borne target in Monterey Bay.
No. 9 Petaluma	Retain	Leased	Long term lease requested by ComNAB spdltr of 19 July 46, to BuDocks.
No. 10 Antioch	Retain	Leased	Lease renewed to 30 June 1947; transferred to NAResTra by CNO 5th end, dtd 26 July 46, on NS Livermore ltr of 3 May 46.
No. 11 Carson Sink	Surplus	Leased	BuDocks directed to cancel leases by CNO ltr of 7 Jan 47.
No. 12 Big Lagoon	Surplus	Leased	Cancellation of lease approved by CNO 4 Jan 1946.

E-9

Reference (a) ComFair Alameda ltr
QT/21-ha (01443) of
10 Sept 45 to CNO.
End-1 ComFair West
Coast QT/90-wow Ser
93448 of 17 Sept 45
to CNO.

End-2 CNO Op-35-22 MW
(SC)A16-3/EN ser 022435
of 8 Oct 45 to BuAer.

End-3 BuAer Aer MA-3-MIC
F41-10 A16(6) C28441 of
27 Oct 45 to BuDocks

Reference (b) ComNAB L2ND ltr NAB12-
92-SR L11-3 H2-14 S82
ser. 6685 of 10 Oct. 45
to CNO.

End-1 CNO Op-515-W-AOL
SO 10 16-76 Ser 60P515
of 23 Oct 45 to BuAer

End-2 Aer-WA-3-RTB H12
N15-EN3 Ser 297180 of 31
Oct. 45 to BuDocks

Reference (c) Com12 ltr ND12-80-Gm
N1-13/H2-14 ser 63570
(Wd-8000) of 21 Sept.
45 to BuDocks.

End-1 BuDocks ND12/N1-13
F-5-5/JCH-am L29-7-81 of
4 Oct. 45 to CNO.

End-2 CNO Op415-4B2-pjp
SO 10 5 52 Ser 692830 of
15 Oct 45 to BuDocks.

Reference (d) ComFair Alameda ltr
QT/21-alre ser 01633 conf.
of 27 Oct 45 to BuDocks

End-1 BuDocks ND12/H1-13
F-5-5/ALS/atd of 17 Dec 45
to CNO

Reference (e) ComNAB L2ND ltr NAB12-80-Ss
N1-13 ser 7296 of 9 Nov 45
to BuDocks.

End-1 Com12 ND12-80-Gm,
L4-3/ND12(2) Ser. 81923

(McK-12325) of 5 Dec 45
to BuDocks.

APPROVALS

Target name and number	Lease or Civil No.	BuDocks R.E. File No.	Com12 R.E. File No. and desig.	ComFairAlameda	Fleet Air West Coast	ComNAB L2ND	Com12	CNO	BuAer	Remarks
Target No. 3 San Mateo Bridge				(a)	(a)--1	(b)	((b)-1 (a)-2	(b)-2	No land involved
Target No. 5 Hollister	Noy(R)-35804 Former Civil # 22698-G	L5-7-Ho	2400(?) Hollister	(a)	(a)--1	(b)		(b)-1 (a)-2	(b)-2 (a)-3	440 acres

APPROVALS

Target Name and Number	Lease or Civil No.	BuDocs R.E. File No.	Com12 R.E. File No. & Designation	ComFairAlameda	Fleet Air West Coast	ComMAB 12ND	Com12	CNO	BuAer	Remarks
Target No. 6 Vernalis	NOy(R)-33956 Former Civil #4719	L5-7-Ve	12850 Vernalis	(a)	(a)--1	(b)		(b)-1 (a)-2	(b)-2 (a)-3	160 acres
Target No. 9 Crows Landing	NOy(R)-35285 NOy(R)-35532 Former Civil #4703			(a)	(a)--1	(b)		(b)-1 (a)-3	(b)-2 (a)-3	confirm identification of Target #9 Winnie Hanson, et al - 640 acres
Target No. 10 Bioch	NOy(R)-35540 & Rev. Permit	I5-7-AM	500	(a)	(a)--1	(b)		(b)-1 (a)-2	(b)-2 (a)-3	502.25 acres
Target No. 12 Big Lagoon	NOy(R)-38139	L5-7-A1-3	825 Big Lagoon	(a)	(a)--1	(b) & (e)		(b)-1 (a)-2	(b)-2 (a)-3	Part of 494.54 acres.
Target No. 13 Humboldt Bay	Civil No. 4952 NOy(R)-38139	C5-7-A1-5	825 So. Humboldt Bay	(a)	(a)--1	(b) & (e)		(b)-1 (a)-2	(b)-2 (a)-3	Part of 494.54 acres
Target No. 14 Pyramid Lake	NOy(R)-36406 Former Civil No. 338	L29-7-N1	8000 Pyramid Lake Paiute Tribe of Nixon, Nevada	(a)	(a)--1	(b)	(c)	(b)-1 (a)-2	(b)-2 (a)-3	Cancelled 15 Jan. 45 No comment.
Target No. 17 Bermond	Permit from Interior	C29-7-Fa-1	1350 Fallon Target Area 1	(a)	(a)--1	(b)		(b)-1 (a)-2	(b)-2 (a)-3	9,600 acres
Target No. 19 Fallon Tar. Area #3			1855 Fallon Target Area 3	(a)	(a)--1	(b)		(b)-1 (a)-2	(b)-2 (a)-3	
Target No. 20 Schurz			1855 Fallon Target Area 4	(a)	(a)--1	(b)		(b)-1 (a)-2	(b)-2 (a)-3	1 sq. mile - Walker River Paiute Tribe
Target No. 21 Arcata - land target	NOy(R)-37686 Former Civil No. 5006	L5-7-A1	12550 Trinidad	(a)	(a)--1	(b) & (e)		(b)-1 (a)-2	(b)-2 (a)-3	640 acres

UNITED STATES PACIFIC FLEET

FLEET AIR ALAMEDA

Q T /JGD/12-agb

U. S. Naval Air Station
Alameda, California

Serial : 746

2 Feb 1946

From: Commander Fleet Air, Alameda.
To: Commandant, Twelfth Naval District.

Subject: Aviation Bombing Targets, Gunnery and Rocket Ranges
and Boat Facilities in Excess of Post-War Aviation
Requirements - Comment on.

Reference: (a) COMTWELFTH Ltr. ND12-80-gc N1-13/R2-14 Serial 11209
dated 28 January 1946

Enclosure: (A) Reference (a).

1. As requested in reference (a), enclosure 1 of reference
(a) has been reviewed.

2. The following comments are offered:

- (a) Target No. 3, San Mateo Bridge - No longer needed.
- (b) Target No. 8, Hollister - No longer needed.
- (c) Target No. 6, Vernalis - It is requested that this target be retained until June 1946.
- (d) Target No. 7, Crow's Landing - Enclosure 1 lists this incorrectly as Target No. 9. Target No. 7, Crow's Landing, is no longer needed; Target No. 9, Petaluma, is needed permanently.
- (e) Target No. 10, Antioch - It is requested that this target be retained until June, 1946.
- (f) Target No. 12, Big Lagoon - No longer needed.
- (g) Target No. 13, Humboldt Bay - No longer needed.
- (h) Target No. 17, Harmond - No longer needed.
- (i) Target No. 19, Fallon Area 3, - No longer needed.
- (j) Target No. 20, Schurz - No longer needed.

NAVAL AIR BASES, TWELFTH NAVAL DISTRICT

STATUS OF FACILITIES

as of 15 FEBRUARY, 1947

INDEX

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Section IV	Miscellaneous	" 8
Section V	Navy Property in use by others	" 10

E-12

Section I

MAJOR FACILITIES

FACILITY	PRESENT STATUS	TITLE IN LAND	REMARKS
NAS Alameda	Retain	Owned	Full operation, Ref CNO Rev. Planning Est. 1 Nov 1946.
NAS Moffett Field	Retain	Owned	Full operation, Ref CNO Rev. Planning Est. 1 Nov 1946.
NAS Oakland	Transferred	Owned & Leased	To NAResTra 1 Oct 46, leases being modified by Com12 per 1st end on BuDocks ltr of 30 Dec 46.
NAS Livermore	Retain	Owned	Inactivated 10 Oct 46, Ref CNO Rev. Plan. Est. 1 Nov 46. Disestablished 15 Dec 46, Ref SecNav, ser 45P24 of 24 Jan 47.
NAAS Arcata	Transferred	Owned & Leased	To BuAer 1 May 46; Ref CNO Rev. Planning Est. 1 Nov 46.
NAAS Crows Landing	Retain	Owned	Inactivated 1 July 46; Ref CNO Rev. Plan. Est. 1 Nov 46. Disestablished 15 Dec 1946, Ref SecNav, ser 45P24 of 24 Jan 47.
NAAS Fallon	Retain	Lease & Permit	As OLF to NAS Alameda; Ref CNO Disp 121820, Feb 47. Disestablished 15 Dec 46, Ref SecNav, ser 45P24 of 24 Jan 47.
NAAS Hollister	Surplus	Owned	To WAA 1 Oct 46. Acceptance of responsibility not rec'd from WAA.
NAAS King City	Surplus	Leased	To R.F.C. 28 Mar 46, to WAA 2-4-46, Ref CNO Rev. Plan. Est. 1 Nov 46.
CGAS So. San Francisco	Returned	Owned	By USCG: to USCG when USCG returned to Treasury Dept.
NAAS Monterey	Caretaker	Owned & Leased	Caretaker 15 Oct 45; Ref CNO Rev. Planning Est. 1 Nov 46.
NAS Santa Rosa	Retain	Owned	Maintenance 1 Feb 46; Ref CNO Rev. Planning Est. 1 Nov 46.
NAS Vernalis	Surplus	Owned	To WAA 17 Oct 46. Acceptance of responsibility not rec'd from WAA.
NAS Watsonville	Surplus	Owned & Surplus <i>Leased</i>	To WAA 15 Feb 1947, by memo agreement.

BOMBING TARGETS
NAVAL AIR BASES, TWELFTH NAVAL DISTRICT

Name	No.	Latitude	Longitude	Type
Tomales Bay	1	38° 12'	122° 56'	D
Abbotts' Lagoon	2	38° 07'	122° 57'	D
San Mateo Bridge	3	37° 41'	122° 17'	D
Skip Bombing	3A	37° 39'	122° 15'	SK
DD Hulk	4	37° 33'	122° 09'	D
Hollister	5	36° 52'	121° 21'	D
Vernalis	6	37° 34'	121° 23'	D
Crows Landing	7	37° 26'	121° 10'	D
Watsonville	8	36° 44'	121° 48'	D-R-X
Watsonville	8A	36° 50' 30"	121° 49' 30"	RA
Petaluma	9	38° 11'	122° 33'	D
Antioch	10	38° 02' 30"	121° 37'	D
Carson Sink	11	39° 41'	118° 34' 20"	D
Big Lagoon	12	41° 11'	124° 07'	R-X
Humboldt Bay	13	40° 43'	124° 15'	R-X
Pyramid Lake	14	39° 51' 20"	119° 26'	D-M
Carson Sink A	15	39° 38'	118° 31' 30"	D-R-X
Carson Sink B	16	39° 45' 20"	118° 42' 20"	D-R-X
Bermond	17	39° 15'	118° 17'	D-M
Fallon A	18	39° 19'	118° 49'	R-X-D-SK
Fallon B	19	39° 09'	118° 41'	X-D-SK
Schurz	20	38° 59'	118° 38'	D
Arcata	21	41° 05'	124° 06'	D
Gustine	22	37° 15'	121° 06'	RA
Madera	23	36° 59'	119° 52' 30"	R-D-RA-SK
Tulare Lake	24	35° 59'	119° 50'	RA
Lovelock 1	25	40° 17'	117° 56' 30"	D
Lovelock 2	26	40° 26' 34"	118° 39' 15"	D
Lovelock 3	27	40° 35' 30"	118° 24'	D
Hunter Liggett	28	35° 55'	121° 13'	R-D
Jenner	29	38° 26'	123° 07'	D
Stewart's Point	30	38° 46'	123° 31'	D

LEGEND: D - Dive Bombing R - Rocket M - Mobile
 SK - Skip Bombing RA - Radar X - Rake Stations

R E S T R I C T E D



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

IN REPLY REFER TO:

1-1-01-SP-1411

May 10, 2001

James R. Reynolds
U.S. Army Corps of Engineers
Clock Tower Building
ATTN: CEMVR-ED-DO (Reynolds)
P.O. Box 2005
Rock Island, IL 61204-2004

Subject: Species List for Formally Used Defense Sites, Merced and Stanislaus Counties, California

We are sending the enclosed list in response to your March 13, 2001, request for information about endangered and threatened species (Enclosure A). The list covers the following U.S. Geological Survey 7½ minute quad or quads: Howard Ranch, Patterson, Newman.

Please read *Important Information About Your Species List* (enclosed). It explains how we made the list and describes your responsibilities under the Endangered Species Act. Please contact Harry Mossman, Biological Technician, at (916) 414-6650, if you have any questions about the attached list or your responsibilities under the Endangered Species Act. For the fastest response to species list requests, address them to the attention of Mr. Mossman at this address. You may fax requests to him at 414-6710 or 6711.

Sincerely,

for Jan C. Knight
Chief, Endangered Species Division

Enclosures

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute *quads*. The United States is divided into these quads, which are about the size of San Francisco. If you requested your list by quad name or number, that is what we used. Otherwise, we used the information you sent us to determine which quad or quads to use.

Animals

The animals on your species list are ones that occur within, *or may be affected by projects within*, the quads covered by the list. Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.

Plants

Any plants on your list are ones *that have actually been observed* in the quad or quads covered by the list. We have also included either a county species list or a list of species in nearby quads. We recommend that you check your project area for these plants. Plants may exist in an area without ever having been detected there.

Surveying

Some of the species on your list may not be affected by your project. A trained biologist or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. For plant surveys, we recommend using the enclosed *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Species*. The results of your surveys should be published in any environmental documents prepared for your project.

State-Listed Species

If a species has been listed as threatened or endangered by the State of California, but not by us nor by the National Marine Fisheries Service, it will appear on your list as a Species of Concern. *However you should contact the California Department of Fish and Game for official information about these species.* Call (916) 322-2493 or write Marketing Manager, California Department of Fish and Game, Natural Diversity Data Base, 1416 Ninth Street, Sacramento, California 95814.

Your Responsibilities Under the Endangered Species Act

All plants and animals identified as *listed* on Enclosure A are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the *take* of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt,

shoot, wound, kill, trap, capture, or collect" any such animal. Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a *formal consultation* with the Service. Such consultation would result in a *biological opinion* addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an *incidental take permit*. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project. Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that mitigates for the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the mitigation plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as *critical habitat*. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Maps and boundary descriptions of the critical habitat may be found in the *Federal Register*. The information is also reprinted in the *Code of Federal Regulations* (50 CFR 17.95).

Candidate Species

We recommend that you address impacts to *candidate* species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Your list may contain a section called *Species of Concern*. This term includes former *category 2*

candidate species and other plants and animals of concern to the Service and other Federal, State and private conservation agencies and organizations. Some of these species may become candidate species in the future.

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6580.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed, candidate and special concern species in your planning, this should not be a problem. We also continually strive to make our information as accurate as possible. Sometimes we learn that a particular species has a different range than we thought. This should not be a problem if you consider the species on the county or surrounding-quad lists that we have enclosed. If you have a long-term project or if your project is delayed, please feel free to contact us about getting a current list. You can also find out the current status of a species by going to the Service's Internet page: www.fws.gov

GUIDELINES FOR CONDUCTING AND REPORTING BOTANICAL INVENTORIES
FOR FEDERALLY LISTED, PROPOSED AND CANDIDATE PLANTS
(September 23, 1996)

These guidelines describe protocols for conducting botanical inventories for federally listed, proposed and candidate plants, and describe minimum standards for reporting results. The Service will use, in part, the information outlined below in determining whether the project under consideration may affect any listed, proposed or candidate plants, and in determining the direct, indirect, and cumulative effects.

Field inventories should be conducted in a manner that will locate listed, proposed, or candidate species (target species) that may be present. The entire project area requires a botanical inventory, except developed agricultural lands. The field investigator(s) should:

1. Conduct inventories at the appropriate times of year when target species are present and identifiable. Inventories will include all potential habitats. Multiple site visits during a field season may be necessary to make observations during the appropriate phenological stage of all target species.
2. If available, use a regional or local reference population to obtain a visual image of the target species and associated habitat(s). If access to reference populations is not available, investigators should study specimens from local herbaria.
3. List every species observed and compile a comprehensive list of vascular plants for the entire project site. Vascular plants need to be identified to a taxonomic level which allows rarity to be determined.
4. Report results of botanical field inventories that include:
 - a. a description of the biological setting, including plant community, topography, soils, potential habitat of target species, and an evaluation of environmental conditions, such as timing or quantity of rainfall, which may influence the performance and expression of target species
 - b. a map of project location showing scale, orientation, project boundaries, parcel size, and map quadrangle name
 - c. survey dates and survey methodology(ies)
 - d. if a reference population is available, provide a written narrative describing the target species reference population(s) used, and date(s) when observations were made
 - e. a comprehensive list of all vascular plants occurring on the project site for each habitat type
 - f. current and historic land uses of the habitat(s) and degree of site alteration
 - g. presence of target species off-site on adjacent parcels, if known
 - h. an assessment of the biological significance or ecological quality of the project site in a local

and regional context

5. If target species is(are) found, report results that additionally include:
 - a. a map showing federally listed, proposed and candidate species distribution as they relate to the proposed project
 - b. if target species is (are) associated with wetlands, a description of the direction and integrity of flow of surface hydrology. If target species is (are) affected by adjacent off-site hydrological influences, describe these factors.
 - c. the target species phenology and microhabitat, an estimate of the number of individuals of each target species per unit area; identify areas of high, medium and low density of target species over the project site, and provide acres of occupied habitat of target species. Investigators could provide color slides, photos or color copies of photos of target species or representative habitats to support information or descriptions contained in reports.
 - d. the degree of impact(s), if any, of the proposed project as it relates to the potential unoccupied habitat of target habitat.
6. Document findings of target species by completing California Native Species Field Survey Form(s) and submit form(s) to the Natural Diversity Data Base. Documentation of determinations and/or voucher specimens may be useful in cases of taxonomic ambiguities, habitat or range extensions.
7. Report as an addendum to the original survey, any change in abundance and distribution of target plants in subsequent years. Project sites with inventories older than three years from the current date of project proposal submission will likely need additional survey. Investigators need to assess whether an additional survey(s) is (are) needed.
8. Adverse conditions may prevent investigator(s) from determining presence or identifying some target species in potential habitat(s) of target species. Disease, drought, predation, or herbivory may preclude the presence or identification of target species in any year. An additional botanical inventory(ies) in a subsequent year(s) may be required if adverse conditions occur in a potential habitat(s). Investigator(s) may need to discuss such conditions.
9. Guidance from California Department of Fish and Game (CDFG) regarding plant and plant community surveys can be found in Guidelines for Assessing the Effects of Proposed Developments on Rare and Endangered Plants and Plant Communities, 1984. Please contact the CDFG Regional Office for questions regarding the CDFG guidelines and for assistance in determining any applicable State regulatory requirements.

QUAD : 424B PATTERSON

Listed Species

Mammals

- riparian (San Joaquin Valley) woodrat, *Neotoma fuscipes riparia* (E) *
 San Joaquin kit fox, *Vulpes macrotis mutica* (E)

Reptiles

- blunt-nosed leopard lizard, *Gambelia (=Crotaphytus) sila* (E)
 giant garter snake, *Thamnophis gigas* (T)

Amphibians

- California red-legged frog, *Rana aurora draytonii* (T)

Fish

- delta smelt, *Hypomesus transpacificus* (T)
 Central Valley steelhead, *Oncorhynchus mykiss* (T)
 Sacramento splittail, *Pogonichthys macrolepidotus* (T)

Invertebrates

- vernal pool fairy shrimp, *Branchinecta lynchi* (T)
 valley elderberry longhorn beetle, *Desmocerus californicus dimorphus* (T)
 vernal pool tadpole shrimp, *Lepidurus packardii* (E)

Proposed Species

Birds

- mountain plover, *Charadrius montanus* (PT)

Candidate Species

Amphibians

- California tiger salamander, *Ambystoma californiense* (C)

Species of Concern

Mammals

- Pacific western big-eared bat, *Corynorhinus (=Plecotus) townsendii townsendii* (SC)
 greater western mastiff-bat, *Eumops perotis californicus* (SC)
 small-footed myotis bat, *Myotis ciliolabrum* (SC)
 long-eared myotis bat, *Myotis evotis* (SC)
 fringed myotis bat, *Myotis thysanodes* (SC)
 long-legged myotis bat, *Myotis volans* (SC)
 Yuma myotis bat, *Myotis yumanensis* (SC)

San Joaquin pocket mouse, *Perognathus inornatus* (SC)

Birds

tricolored blackbird, *Agelaius tricolor* (SC)

western burrowing owl, *Athene cunicularia hypugea* (SC)

Aleutian Canada goose, *Branta canadensis leucopareia* (D)

ferruginous hawk, *Buteo regalis* (SC)

little willow flycatcher, *Empidonax traillii brewsteri* (CA)

American peregrine falcon, *Falco peregrinus anatum* (D)

greater sandhill crane, *Grus canadensis tabida* (CA)

Reptiles

silvery legless lizard, *Anniella pulchra pulchra* (SC)

northwestern pond turtle, *Clemmys marmorata marmorata* (SC)

southwestern pond turtle, *Clemmys marmorata pallida* (SC)

San Joaquin coachwhip (=whipsnake), *Masticophis flagellum ruddocki* (SC)

California horned lizard, *Phrynosoma coronatum frontale* (SC)

Amphibians

western spadefoot toad, *Scaphiopus hammondii* (SC)

Fish

green sturgeon, *Acipenser medirostris* (SC)

river lamprey, *Lampetra ayresi* (SC)

Kern brook lamprey, *Lampetra hubbsi* (SC)

Pacific lamprey, *Lampetra tridentata* (SC)

longfin smelt, *Spirinchus thaleichthys* (SC)

Invertebrates

California linderiella fairy shrimp, *Linderiella occidentalis* (SC)

Plants

diamond-petaled poppy, *Eschscholzia rhombipetala* (SC) *

QUAD : 424D NEWMAN

Listed Species

Mammals

Fresno kangaroo rat, *Dipodomys nitratooides exilis* (E)

riparian (San Joaquin Valley) woodrat, *Neotoma fuscipes riparia* (E) *

KEY:

(E) <i>Endangered</i>	Listed (in the Federal Register) as being in danger of extinction.
(T) <i>Threatened</i>	Listed as likely to become endangered within the foreseeable future.
(P) <i>Proposed</i>	Officially proposed (in the Federal Register) for listing as endangered or threatened.
(PX) <i>Proposed Critical Habitat</i>	Proposed as an area essential to the conservation of the species.
(C) <i>Candidate</i>	Candidate to become a <i>proposed</i> species.
(SC) <i>Species of Concern</i>	May be endangered or threatened. Not enough biological information has been gathered to support listing at this time.
(MB) <i>Migratory Bird</i>	Migratory bird
(D) <i>Delisted</i>	Delisted. Status to be monitored for 5 years.
(CA) <i>State-Listed</i>	Listed as threatened or endangered by the State of California.
(*) <i>Extirpated</i>	Possibly extirpated from this quad.
(**) <i>Extinct Critical Habitat</i>	Possibly extinct. Area essential to the conservation of a species.

ORDNANCE AND EXPLOSIVES
ARCHIVES SEARCH REPORT
FOR
STANISLAUS BOMBING TARGET
STANISLAUS COUNTY, CALIFORNIA
PROJECT NUMBER JO9CA107401

APPENDIX G

REAL ESTATE DOCUMENTS

APPENDIX G

Real Estate Documents

Table of Contents

G-1 Letter discussing the acquisition of 640 acres in Stanislaus County to establish a dive-bomb target (B-24).

G-2 Lease for 160 acres in Stanislaus County, California (B-25).

G-3 Lease for 480 acres in Stanislaus County, CA (B-26).



ND12/21-13
P-5-3/248:lm
05-7-42-2

ADDRESS REPLY TO
EXECUTIVE OFFICE OF THE SECRETARY
AND REFER TO INITIALS
AND NO.

NAVY DEPARTMENT
WASHINGTON

JUN 8 1942

The Honorable
The Attorney General

Sir:

Pursuant to the authority of the Acts of Congress approved March 27, 1942 (Public Law 507, 77th Congress) and February 7, 1942 (Public Law 441, 77th Congress), the Secretary of the Navy has selected for acquisition 640 acres of land, more or less, in Stanislaus County, California, to be used for the location of a dive bombing target in connection with Gross Landing Outlying Field.

The subject lands are delineated on the map entitled "Property Acquisition Map, Bombing Target, near Gross Landing, California," dated March 29, 1942, enclosed as Exhibit "B". The lands are more particularly described in Exhibit "A".

In accordance with the authority vested in the Secretary of the Navy by the aforementioned Acts of Congress, it is requested that condemnation proceedings be instituted to acquire a term for years ending June 30, 1944, subject, however, to easements for existing pipe lines and public utilities.

The ostensible owners of the property are:

Minnie Hansen
Cox Estate

Very truly yours,

James Forrestal
Acting

- Encls.
1. Description
2. Map

cc: Com 12

Comdr. Williams

EWING

640 ACRES, MORE OR LESS, LOCATED NEAR CROWS LANDING, STANISLAUS COUNTY, CALIFORNIA.

All those certain parcels of land situate in T. 6 S., R. 7 E., M.D.B.M. Stanislaus County, California, more particularly described as follows:

PARCEL NO. 1

- NE $\frac{1}{4}$ of SE $\frac{1}{4}$ Section 3 T. 6 S., R. 7 E., M.D.B.M.
- N $\frac{1}{2}$ of SW $\frac{1}{4}$ Section 2 T. 6 S., R. 7 E., M.D.B.M.
- NW $\frac{1}{4}$ of SE $\frac{1}{4}$ Section 2 T. 6 S., R. 7 E., M.D.B.M.

Containing a total of 160 acres, more or less, of land.

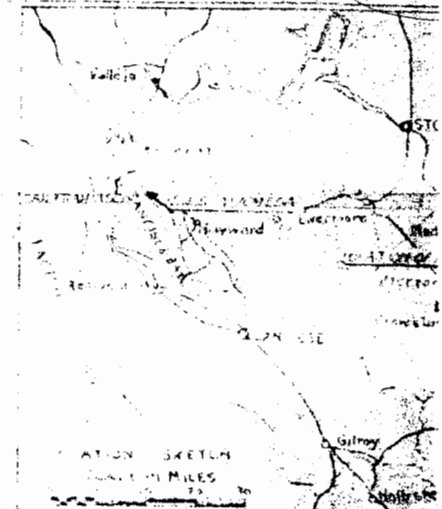
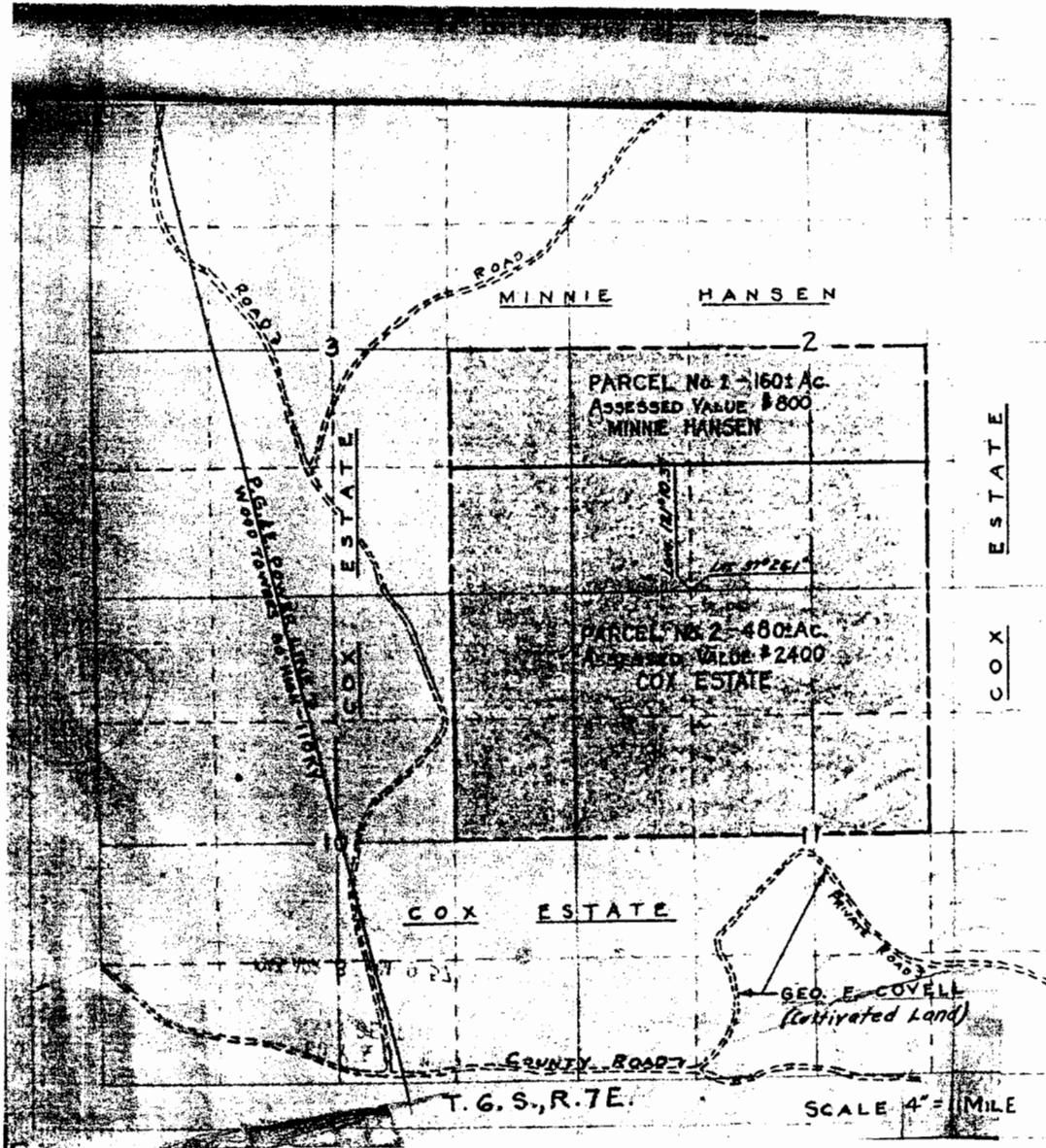
PARCEL NO. 2

- SE $\frac{1}{4}$ of SE $\frac{1}{4}$ Section 3 T. 6 S., R. 7 E., M.D.B.M.
- E $\frac{1}{2}$ of SW $\frac{1}{4}$ Section 2 T. 6 S., R. 7 E., M.D.B.M.
- SW $\frac{1}{4}$ of SE $\frac{1}{4}$ Section 2 T. 6 S., R. 7 E., M.D.B.M.
- E $\frac{1}{2}$ of NE $\frac{1}{4}$ Section 10 T. 6 S., R. 7 E., M.D.B.M.
- NW $\frac{1}{4}$ Section 11 T. 6 S., R. 7 E., M.D.B.M.
- E $\frac{1}{2}$ of NE $\frac{1}{4}$ Section 11 T. 6 S., R. 7 E., M.D.B.M.

Containing a total of 480 acres, more or less.

As delineated on that certain map P.W. Drawing 13328a HOB, San Francisco, Cal., Twelfth Naval District, NAS, Alameda, Calif., entitled "Property Acquisition Map Bombing Target Near Crows Landing, Calif.", dated 29 Mar. 1943.

G-1



PARCEL No.	AREA (Acres)	OWNER	LAST KNOWN ADDR
1	160	MINNIE HANSEN	Box 7, Patterson
2	480	COX ESTATE	Westley, Calif

NOTE:
 This drawing supersedes drawing No. DB-1332 due to relocation of property to be acquired.

DB1332a NAVAL OPERATING BASE SAN FRANCISCO, CALIF.
 TWELFTH NAVAL DISTRICT
 NAVAL AIR STATION, ALAMEDA, CALIF.
 PROPERTY ACQUISITION MAP
 BOMBING TARGET
 NEAR CROWS LANDING, CALIF.
 DISTRICT PUBLIC WORKS OFFICE

N. J. A. 114

Form of Renewal No. 1

FORM OF RENEWAL OF GOVERNMENT LEASE NOY(R) 35285

LEASE BETWEEN

MINNIE HANSEN

AND

THE UNITED STATES OF AMERICA

This is to notify the above-named lessor that under the provisions of paragraph 5 of Lease No. **NOY(R) 35285**, dated **July 1, 1944**, between **MINNIE HANSEN** and the United States of America for premises, viz:

All those certain lands situate in T. 6 S., R. 7 E., M.D.B. & M., Stanislaus County, California, more particularly described as follows:

PARCEL No. 1

NE $\frac{1}{4}$ of SE $\frac{1}{4}$ Section 3 T. 6 S., R. 7 E., M.D.B. & M.

N $\frac{1}{2}$ of SW $\frac{1}{4}$ Section 2 T. 6 S., R. 7 E., M.D.B. & M.

NW $\frac{1}{4}$ of SE $\frac{1}{4}$ Section 2 T. 6 S., R. 7 E., M.D.B. & M.

Containing 160 acres, more or less, of land.

Dive Bombing Target Site

Rental, \$640.00 per annum

the United States of America this **31st day of May, 1944**, elects to renew the said lease for the period of **one year** from and after **June 30, 1944**, and by these presents does renew, extend, and adopt the said lease and all the terms and conditions thereof for the period beginning **July 1, 1944**, and ending **June 30, 1945**.

The lessor is requested to acknowledge receipt hereof.

Minnie Hansen
P.O. Box 7
Patterson, Calif.

CC-GAO(Audit)

BuSan/A

BNAER

ComTwelve

DO, SAC, Alameda

SO, "

Comdr. E. E. Williams

THE UNITED STATES OF AMERICA,

Lt Comdr. Andrew J. Murphy, Jr., USNR
Room 8823

By _____

(Official title)

By direction of the Chief of the Bureau Yards and Docks, acting under direction the Secretary of the Navy.

N.J.A. 114

Form of Renewal No. 1

FORM OF RENEWAL OF GOVERNMENT LEASE NOY(R) 35285

LEASE BETWEEN

MINNIE HANSEN

AND

THE UNITED STATES OF AMERICA

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All those certain lands situate in T. 6 S., R. 7 E., M.D.B. & M., Stanislaus County, California, more particularly described as follows:

PANCEL No. 1

NE 1/4 of SE 1/4 Section 3 T. 6 S., R. 7 E., M.D.B. & M.

S 1/2 of SW 1/4 Section 2 T. 6 S., R. 7 E., M.D.B. & M.

NW 1/4 of SE 1/4 Section 2 T. 6 S., R. 7 E., M.D.B. & M.

Containing 160 acres, more or less, of land.

Dive Bombing Target Site

Rental, \$640.00 per annum

the United States of America this 31st day of May, 1944, elects to renew the said lease for the period of one year from and after June 30, 1944, and by these presents does renew, extend, and adopt the said lease and all the terms and conditions thereof for the period beginning July 1, 1944, and ending June 30, 1945.

The lessor is requested to acknowledge receipt hereof.

Minnie Hansen
P.O. Box 7
Patterson, Calif.

THE UNITED STATES OF AMERICA,
Lt Comdr. Andrew J. Murphy, Jr., USNB
Room 8323

By _____
(official title)

By direction of the Chief of the Bureau of Yards and Docks, acting under direction of the Secretary of the Navy.

CC-GAO(Audit)

BuSan A

BUAER

ConfTwelve

DO, WAC, Alameda

SO, * *

Condr. E. S. Williams

DECLASSIFIED

Authority E.O. 10501
By WDP NARA Date 1/30/01

ADDRESS REPLY TO
THE BUREAU OF YARDS AND DOCKS

AND REFER TO

NAVY DEPARTMENT

WASHINGTON 25, D. C.



ND12/11-13
F-5-5/CHS/ebw

October 21, 1944

From: Chief of the Bureau of Yards and Docks.
To: The Commandant, Twelfth Naval District.
Subject: Lease NOy(R)-35532 with Anna S. Cox, et al., covering approximately 480 acres of land in Stanislaus County, Calif., for a dive bombing target site; rental, \$1,920.00 per annum.

Reference: (a) Com12 ltr ND12-80-Fn; L4-3/ND12; Serial 46990, to BuDocks dated Oct. 7, 1944.

1. Enclosure (1) is forwarded for delivery to Lessor and Enclosure (2) is furnished for the files of the Commandant.

By direction of Chief, BuDocks:

JOHN J. COURTNEY

Encl. HW

- (1) Triplicate original of subject lease.
- (2) Copy of Enclosure (1).

CC - GAO (Audit) (Form 1036)

BuSenda

BuAero

Comdr. Ernest E. Williams, c/o Com12

Supp. & Acct'g. Officer, 12th N.D.

DO, 12th Naval Dist.

43020531

Handwritten: 11-9/mar 27(3)
mar 27(3)

DECLASSIFIED
Authority E.O. 10501
By WDP NARA Date 1/30/01

Form No. 2 (Revised)
Secretary of the Treasury
May 6, 1962

Aviation Navy, 1945

All public bills for payment under this contract should include a reference to No. NAV(R)-35532

LEASE

BETWEEN

J. D. COX, SADIE A. COX, MABEL J. COX, AND DOROTHY M. COX, EXECUTRIX FOR THE ESTATE OF J. D. COX

AND

THE UNITED STATES OF AMERICA

1. THIS LEASE, made and entered into this **1st** day of **July**

in the year one thousand nine hundred and **forty-three** by and between **J. D. COX, SADIE A. COX, MABEL J. COX, AND DOROTHY M. COX, EXECUTRIX FOR THE ESTATE OF J. D. COX**

whose address is **c/o W. W. COX, TRUSTEE, WENTLEY, CALIFORNIA**

their for themselves, heirs, executors, administrators, successors, and assigns, hereinafter called the Lessor, and **THE UNITED STATES OF AMERICA**, hereinafter called the Government:

WITNESSETH: The parties hereto for the considerations hereinafter mentioned covenant and agree as follows:

2. The Lessor hereby leases to the Government the following described premises, viz:

All those certain parcels of land situate in **T. 6 S., R. 7 E., M.D.B. & M.**, Stanislaus County, California, more particularly described as follows:

PARCELS NO. 2

- SW 1/4 of SE 1/4 Section 3, T. 6 S., R. 7 E., M.D.B. & M.**
- SW 1/4 of NW 1/4 Section 2, T. 6 S., R. 7 E., M.D.B. & M.**
- SW 1/4 of SE 1/4 Section 2, T. 6 S., R. 7 E., M.D.B. & M.**
- SE 1/4 of NE 1/4 Section 10, T. 6 S., R. 7 E., M.D.B. & M.**
- NE 1/4 Section 11, T. 6 S., R. 7 E., M.D.B. & M.**
- SW 1/4 of NW 1/4 Section 11, T. 6 S., R. 7 E., M.D.B. & M.**

Containing a total of **450** acres, more or less.

to be used exclusively for the following purposes (see instruction No. 3):

DIVE BOMBING TARGET SITE, or other military or Naval Purpose

3. TO HAVE AND TO HOLD the said premises with their appurtenances for the term beginning **July 1, 1943** and ending with **June 30, 1945**

DECLASSIFIED
 Authority E.O. 10501
 By WDP NARA Date 1/30/64

4. The Government shall not assign this lease in any event, and shall not sublet the demised premises except to a desirable tenant, and for a similar purpose, and will not permit the use of said premises by anyone other than the Government, such sublessee, and the agents and servants of the Government, or of such sublessee.

5. This lease may, at the option of the Government, be renewed from year to year at a rental of **One Thousand Nine Hundred Twenty and No/100 Dollars (\$1,920.00) per annum** and otherwise upon the terms and conditions herein specified, provided notice be given in writing to the Lessor at least **thirty (30)** days before this lease or any renewal thereof would otherwise expire: Provided that no renewal thereof shall extend the period of occupancy of the premises beyond the **/// six months day of ///** after the termination of the existing **state and/or states of war.**

6. The Lessor shall furnish to the Government, during the occupancy of said premises, under the terms of this lease, as part of the rental consideration, the following:

NOTHING

7. The Government shall pay the Lessor for the premises rent at the following rate:
One Thousand Nine Hundred Twenty and No/100 Dollars (\$1,920.00) per annum.

Payment shall be made at the end of each **three months (quarterly)**

8. The Government shall have the right, during the existence of this lease, to make alterations, attach fixtures, and erect additions, structures, or signs, in or upon the premises hereby leased (provided such alterations, additions, structures, or signs shall not be detrimental to or inconsistent with the rights granted to other tenants on the property or in the building in which said premises are located); which fixtures, additions, or structures so placed in or upon or attached to the said premises shall be and remain the property of the Government and may be removed therefrom by the Government prior to the termination of this lease, and the Government, if required by the Lessor, shall, before the expiration of this lease or renewal thereof, restore the premises to the same condition as that existing at the time of entering upon the same under this lease, reasonable and ordinary wear and tear and damages by the elements or by circumstances over which the Government has no control, excepted: Provided, however, that if the Lessor requires such restoration, the Lessor shall give written notice thereof to the Government **twenty (20)** days before the termination of the lease.

DECLASSIFIED
Authority E.O. 10501
By WDP NARA Date 1/30/01

Standard Form No. 9
and May 6, 1962
(Sheet 2)

[LEASE]

9. The Lessor shall, unless herein specified to the contrary, maintain the said premises in good repair and tenable condition during the continuance of this lease, except in case of damage arising from the act or the negligence of the Government's agents or employees. For the purpose of so maintaining the premises, the Lessor reserves the right at reasonable times to enter and inspect the premises and to make any necessary repairs thereto.

10. If the said premises be destroyed by fire or other casualty this lease shall immediately terminate. In case of partial destruction or damage, so as to render the premises untenable, either party may terminate the lease by giving written notice to the other within fifteen days thereafter, and if so terminated no rent shall accrue to the Lessor after such partial destruction or damage.

11. No Member of or Delegate to Congress or Resident Commissioner shall be admitted to any share or part of this lease or to any benefit to arise therefrom. Nothing, however, herein contained shall be construed to extend to any incorporated company, if the lease be for the general benefit of such corporation or company.

12. This lease or any renewal thereof may be cancelled by the Government on thirty (30) days written notice to the Lessors of such intention to so cancel. In the event this lease is so cancelled, the Government shall pay only the pro rata rent for the period the Government occupied the premises.

13. Paragraphs 9 and 10 hereof have been deleted.

For Paragraph 14 see attached Rider No. 1.

IN WITNESS WHEREOF, the parties hereto have hereunto subscribed their names as of the date first above written.

In presence of:
W. S. COX,
San Diego, Calif.
(Address)

ANN E. COX, /s/
SARIE A. COX, /s/
MABLE J. COX, /s/
ANN FRU N. COX, /s/ Executrix
Lessors

Payment to be made by the Disbursing Officer, Twelfth Naval District.

By John J. Courtney
By direction of the Chief of the
Bureau of Yards and Docks, acting
under the direction of the
Secretary of the Navy.

(If Lessor is a corporation, the following certificate shall be executed by the secretary or assistant secretary.)

I, _____, certify that I am the _____
Secretary of the corporation named as Lessor in the attached lease; that _____
_____, who signed said lease on behalf of the Lessor, was then
_____ of said corporation; that said lease was duly signed for and
in behalf of said corporation by authority of its governing body, and is within the scope of its corporate powers.

[CORPORATE SEAL]

DECLASSIFIED
Authority E.O. 10501
By WDP NARA Date 1/30/01

RIDER No. 1

14. This lease has been negotiated in settlement of Parcel No. 2 of that certain proceeding entitled "United States of America vs. 640 acres of land, more or less, in the County of Stanislaus, State of California, Minnie Hansen et al., " Civil No. 4703, in the District Court of the United States of America, Northern District of California, Northern Division.

ORDNANCE AND EXPLOSIVES
ARCHIVES SEARCH REPORT
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APPENDIX H

NEWSPAPERS/JOURNALS

(Not used in this report)

ORDNANCE AND EXPLOSIVES
ARCHIVES SEARCH REPORT
FOR
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STANISLAUS COUNTY, CALIFORNIA
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APPENDIX I

INTERVIEWS

APPENDIX I

INTERVIEWS

Table of Contents

I-1 Interview with Mr. Stanley Cox, Westly, CA.

CONVERSATION RECORD	TIME 1000	DATE 12 June 2001
----------------------------	---------------------	-----------------------------

TYPE

VISIT

CONFERENCE

TELEPHONE
INCOMING
OUTGOING

NAME OF PERSON CONTACT WITH Mr. Stanley Cox Westly, CA 95387	ORGANIZATION Private Citizen	TELEPHONE NO. (209) 894-5755
---	--	--

Subject

Stanislaus Bomb Target No. 7

SUMMARY: Interview with Mr. Stanley Cox current owner of the property: Mr. Cox's family owned the property that comprised Stanislaus Bomb Target No. 7. Minnie Hansen the other owner with whom the Navy had a lease with was a relative. He was in the Navy during World War 2 (WWII) and remembers the family wanting to do their part to help. During WWII the Navy leased the property to use as a bomb target and used it until the cessation of hostiles at the end of WWII. The family was very upset over the numerous grass fires, which were started with the practice bombs. The Navy built a road up the center from Oak Flat Road to the location of project area B. There were obsolete vehicles that the Navy used for targets placed along the road and several circles were drawn on hilltops. When the Navy withdrew its use of the target, he remembers them digging a huge trench with a dozer and putting the surface debris into the trench. The trench was closed up and the Navy departed. He has never encountered any live OE since the navy departed. Throughout the years since site closure, debris has worked its way to the surface. The Navy had assured him that none of the debris would harm him or his cattle in any way, since they only used practice ordnance.

ACTION REQUIRED

ACTION TAKEN

NAME OF PERSON DOCUMENTING CONVERSATION Nickolas Heleg-Greza	ORGANIZATION CEMVR-ED-DO	TELEPHONE NUMBER (309) 782-1486
SIGNATURE	TITLE UXO Spec	DATE 12 June 2001

ORDNANCE AND EXPLOSIVES
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APPENDIX J

PRESENT DAY SITE PHOTOGRAPHS

APPENDIX J

REFERENCE MAPS/DRAWINGS

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- J-1 View to the northwest across Area C to Area A.
- J-2 View to the east from Area E.
- J-3 Area D, practice Bomb debris.
- J-4 Area B, Mk15 - 100 lb practice bomb debris.
- J-5 Area B, practice Bomb debris.
- J-6 One of several Mk15 -5 100 lb practice bomb suspension bands.
- J-7 Area C, Mk23 practice bomb debris
- J-8 Area A, Remains of target ring near the summit.
- J-9 Area A, 15-foot wood pole on summit of Area A.
- J-10 Area A, Remnants of white rock target ring.
- J-11 General area view from Interstate 5.



J-1: View to the northwest across Area C to Area A. The red arrow points to Area A. The green arrow indicates the road in Area C.



J-2: View to the east from Area E, the suspected burial area. The green arrow points to the road in Area C. Picture J-1 was taken from ☆ . The picture location for J-3 and Area D is marked with ✦.



J-3: Area D, Practice Bomb debris adjacent to an intermittent stream.



J-4: Area B, Mk15-100 lb practice bomb debris.



J-5: Area B, Practice Bomb debris on southwest side of hill.



J-6: One of many Mk15-100 lb practice bomb suspension bands observed in Areas B, C and D.



J-7: Area C, Mk23 Practice Bomb debris east of the road.



J-8: Area A, Remains of target ring near the summit of hill .



J-9: Area A, 15-foot wood pole on summit of Area A. Other wood boards in the same area had remnants of white paint.



J-10: Area A, Remnants of white rock target ring near the hill's summit.



J-11: General area view from Interstate 5. The area west of I-5 is characterized by grass covered rolling hills. During the early spring the grass is green; after May the grass dries and turns the hills a golden color, which represents an extreme fire hazard.

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APPENDIX K

HISTORICAL PHOTOGRAPHS

APPENDIX K

HISTORICAL PHOTOGRAPHS

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K-1 Spec sheet for the PB4Y-1 Liberator.

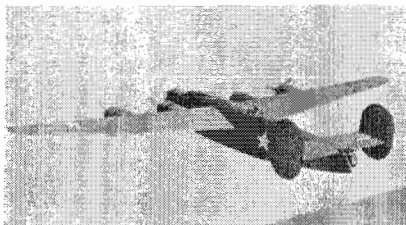
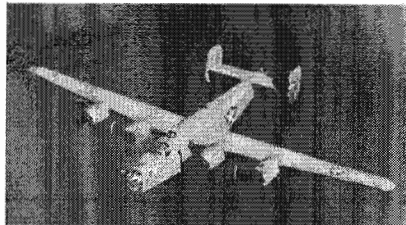
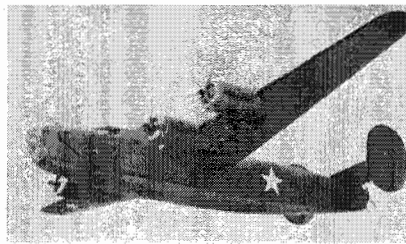
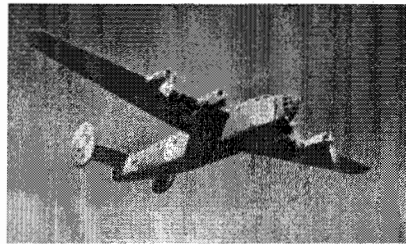
K-2 Spec sheet for the PB4Y-2 Privateer.

K-3 1945 aerial of Crows Landing.

K-4 Navy Training Unit Liberators circa 1943 PB4Y-1 aircraft on Crows Landing.

K-5 Spring 1945 view of PB4Y-2 aircraft and late war Privateer at Crows Landing.

PB4Y-1 Liberator



ARMY: B.31E
 U.S. ARMY AIR CORPS
 U.S. AIR FORCE
 U.S. AIR FORCE
 U.S. AIR FORCE

HEAVY BOMBER - TRANSPORT

U.S.A. U.K.

CONSOLIDATED U.S.A.

SCALE 1-FOOT MAN

OUTSTANDING FEATURES: High wing monoplane. Four radial engines. Long narrow equally tapered wings with small rounded tips and slight dihedral. Deep belly structure. 2 stage rounded main line and rudder's air limb with outer end of stabilizer.

INTEREST: This transport bomber is used in all theaters by the British and the U. S. Army Air Forces. It has high speed, powerful armaments and is extremely maneuverable for its size. All of these factors reduce the number of fighter craft required for its protection. The B-24's high performance results in part from its clean design and use of the thin "Shear" wing which materially reduces drag. The military transport version, designated as the C-87, has a radial engine cowling and a cabin under the wing in place of the bomb bay. It was this aircraft which carried Mr. Wittle of his record-breaking mission in the summer of 1941.

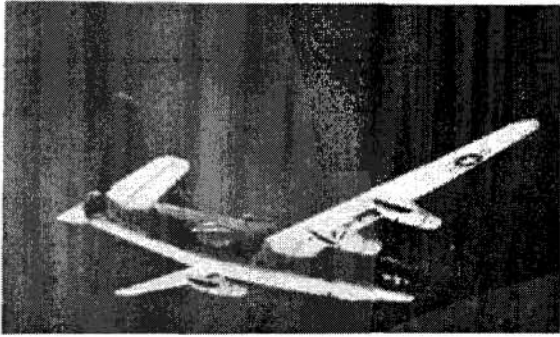
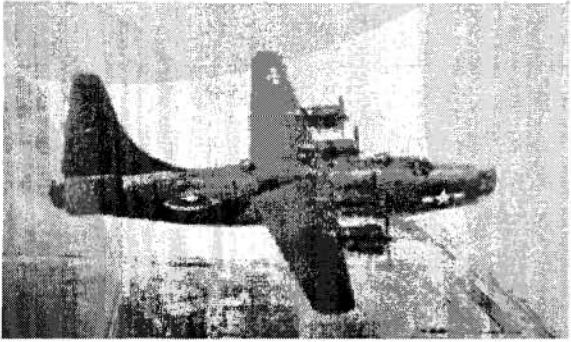
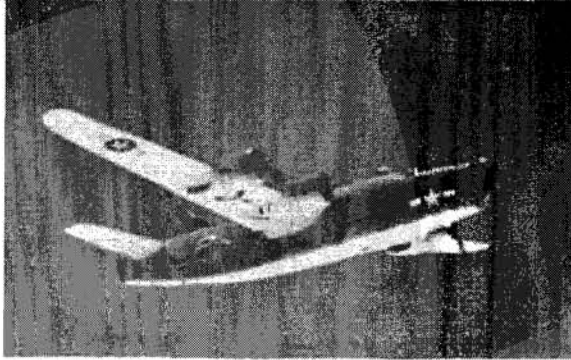
B-24 "LIBERATOR"

SPAN: 220 ft.
 LENGTH: 66 ft.
 APPROX. MAX. SPEED: 302 m. p. h.

SERVICE CEILING: 28,000 ft.

Length	66 feet
Wing Span	110 feet
Basic Weight	38,000 lbs
Gross Weight	56,000 lbs
Max Gross Weight	71,200 lbs
Max Range	1,700 miles with payload
Max Endurance	15+ hours
Max Speed	290 kts @ 25,000 feet
Service Ceiling	28,000 feet
Engines	Pratt&Whitney R-1830-65
Bomb Load	20-100lb bombs; or 12-300lb; or 8 or 12 500lb or 600lb; or 8-1000lb or 1100lb; or 4-2000lb
Guns	10 .50 caliber machine guns
Crew	10

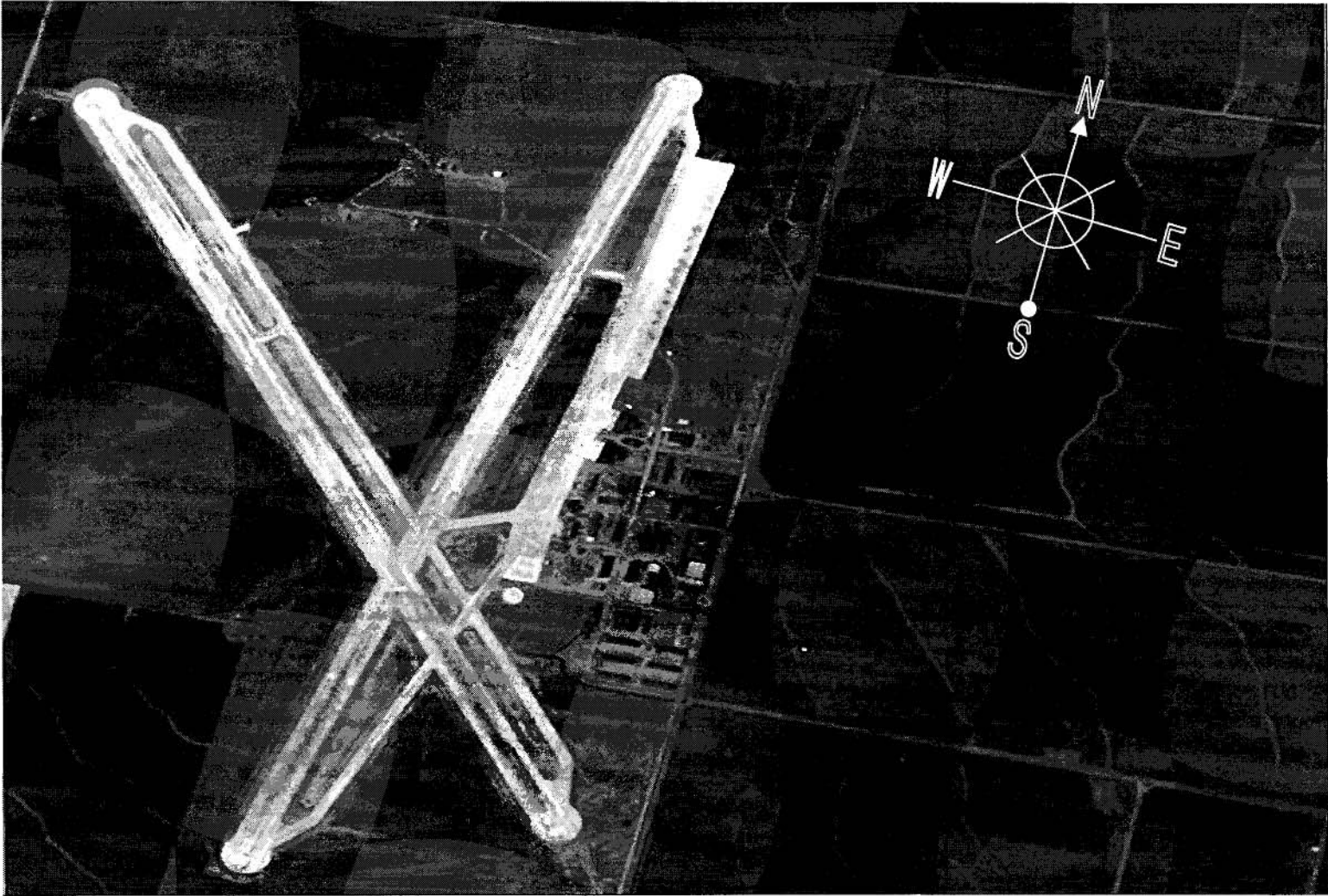
PB4Y-2 Privateer



General characteristics PB4Y-2

Primary function	Reconnaissance	
Power plant	Four Pratt&Whitney R-1830-94 or Wright R-1860-52 Cyclone radial engines	
Thrust	4x 1,350 HP	4x 1,007 kW
Length	74 ft 7 in	22.73 m
Height	30 ft 1 in	9.17 m
Wingspan	110 ft	93.53 m
Wingarea	1,048 sq ft	97.36 sq m
Weight	empty	37,485 lb
	max.	65,000 lb
Speed	237 mph	381 km/h
Ceiling	20,670 ft	6,300 m
Range	2,800 miles	4,500 km
Armament	12x 12.7mm machine gun; up to 5,806 kg bombs	
Crew	Eleven	
Date deployed	1944	

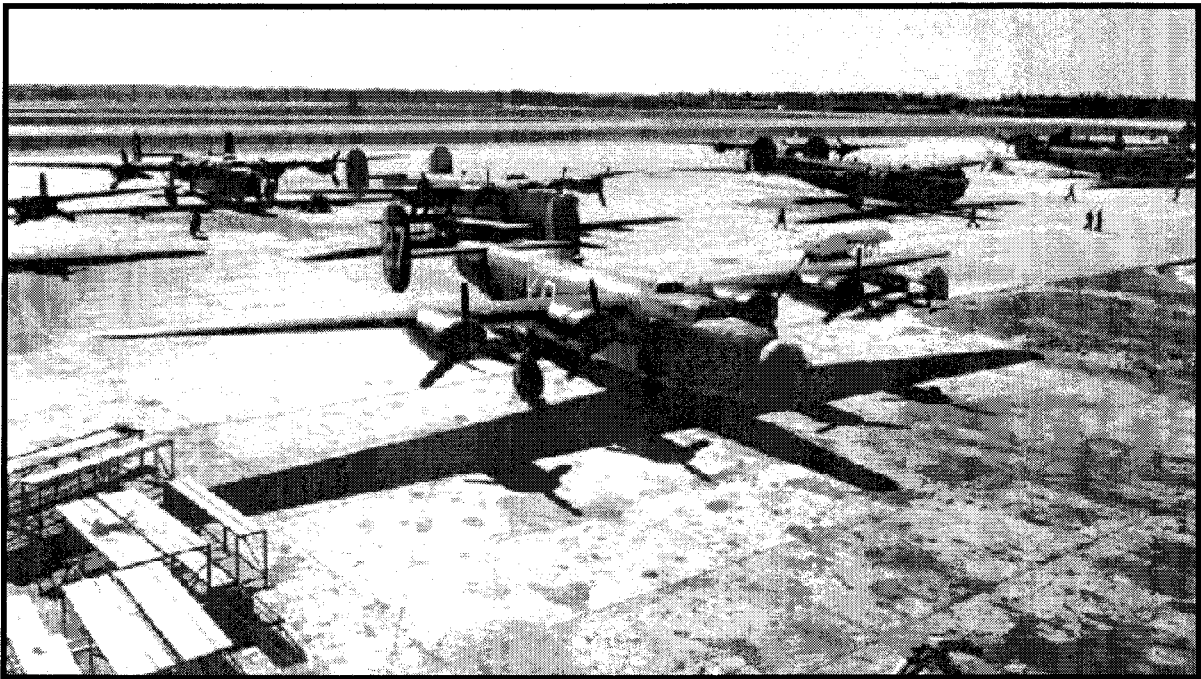
K-3



Crows Landing, 5 August 1947. View is from the southeast to northwest.



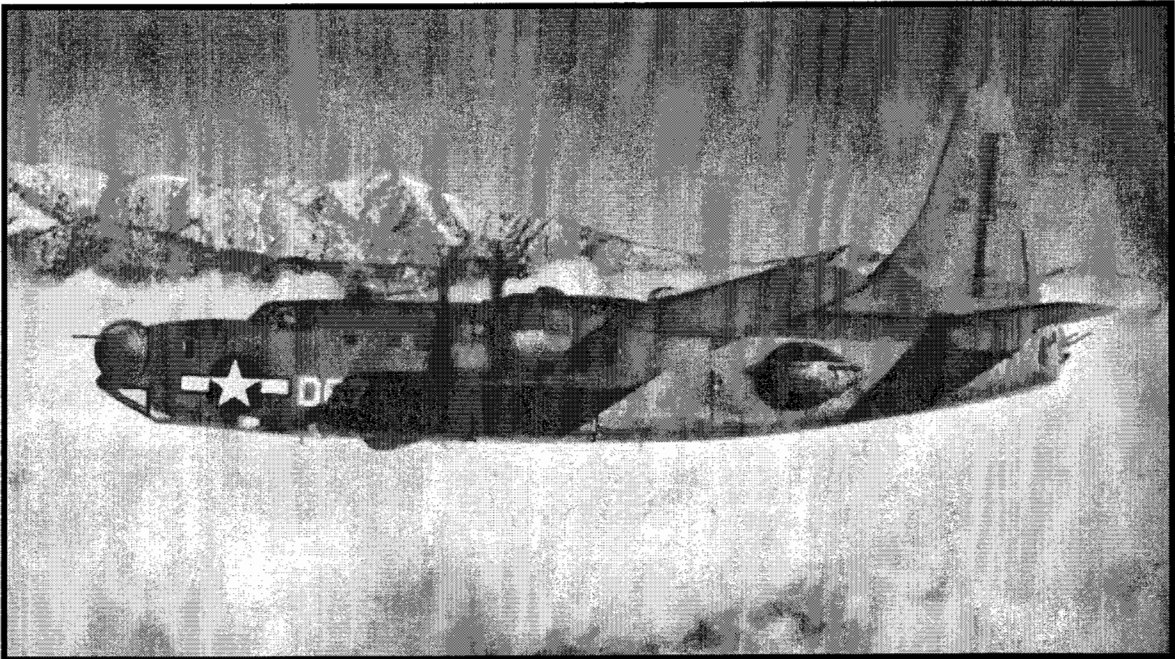
PB4Y-1 CC65, "Shuk", after a hard landing at Crows Landing. Circa October 1943



PB4Y-1, Navy Training Unit Liberator circa 1943



PB4Y-2, Crows Landing, circa Spring 1945



Late war PB4Y-2

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APPENDIX L

REFERENCE MAPS/DRAWINGS

APPENDIX L

REFERENCE MAPS/DRAWINGS

Table of Contents

L-1 Topographic Map with Stanislaus target area overlay (B-34).

L-2 Soil map of West Stanislaus County, California on Paterson, California Quadrangle topographic map (B-35).

L-3 General Soils Map (B-35).

L-4 Soil Survey Map (B-35).

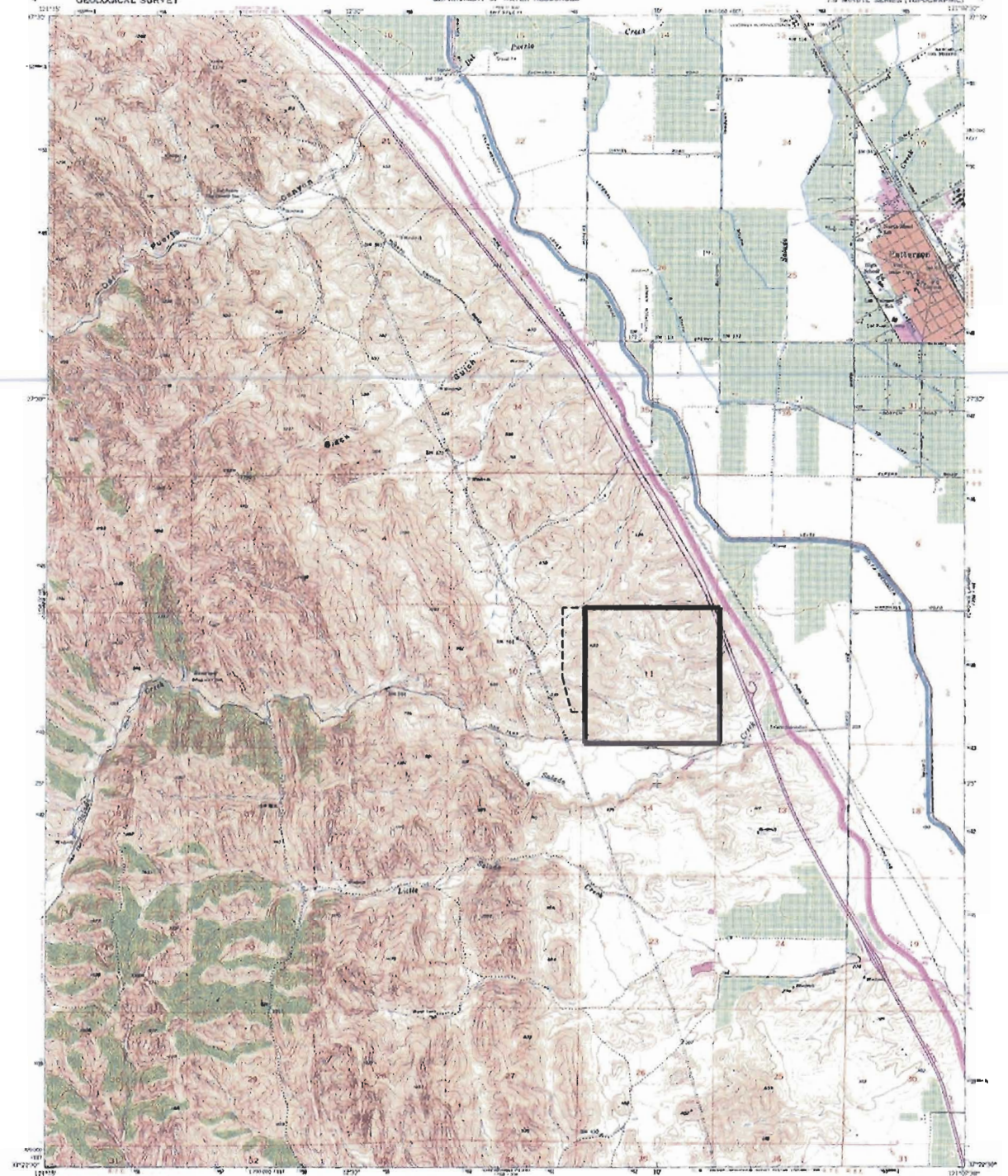
L-5 Hydrologic Groups (B-35).

L-6 Aerial Photograph, 23 May 1993 (B-36).

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

PATTERSON QUADRANGLE
CALIFORNIA - STANISLAUS CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Revised, edited, and published by the Geological Survey
Original by USGS and USGS/AS
Elevation by 1986-88 survey 1993 and by 1980 contour method
Culture and drainage compiled from aerial photographs
Scale 1:50,000 Field notes 1953
Physical projection 1987 State American datum
1:50,000 feet based on 8.25-minute coordinate system, zone 3
180-degree Universal Transverse Mercator grid
Zone 10 shown in blue
Ties to the published North American Datum 1983
and the datum that 12 meters north and
82 meters east in datum by datum conversion
Red ink indicates areas in which only features buildings are shown
Detailed land use maps are available separately
Detailed land use maps are available separately



SCALE 1:24,000
CONTROLLER INTERVAL TO LEFT
SURVEYING CONTROL NUMBER 3 1189
NATIONAL GEODETIC SURVEY DATUM OF 1983
THIS MAP COMPLETS WITH NATIONAL MAP SECURITY STANDARDS
FOR SALE BY U.S. GEOLOGICAL SURVEY CENTER QUANTITY DISCOUNTS ON REQUEST
A QUANTITY DISCOUNT TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

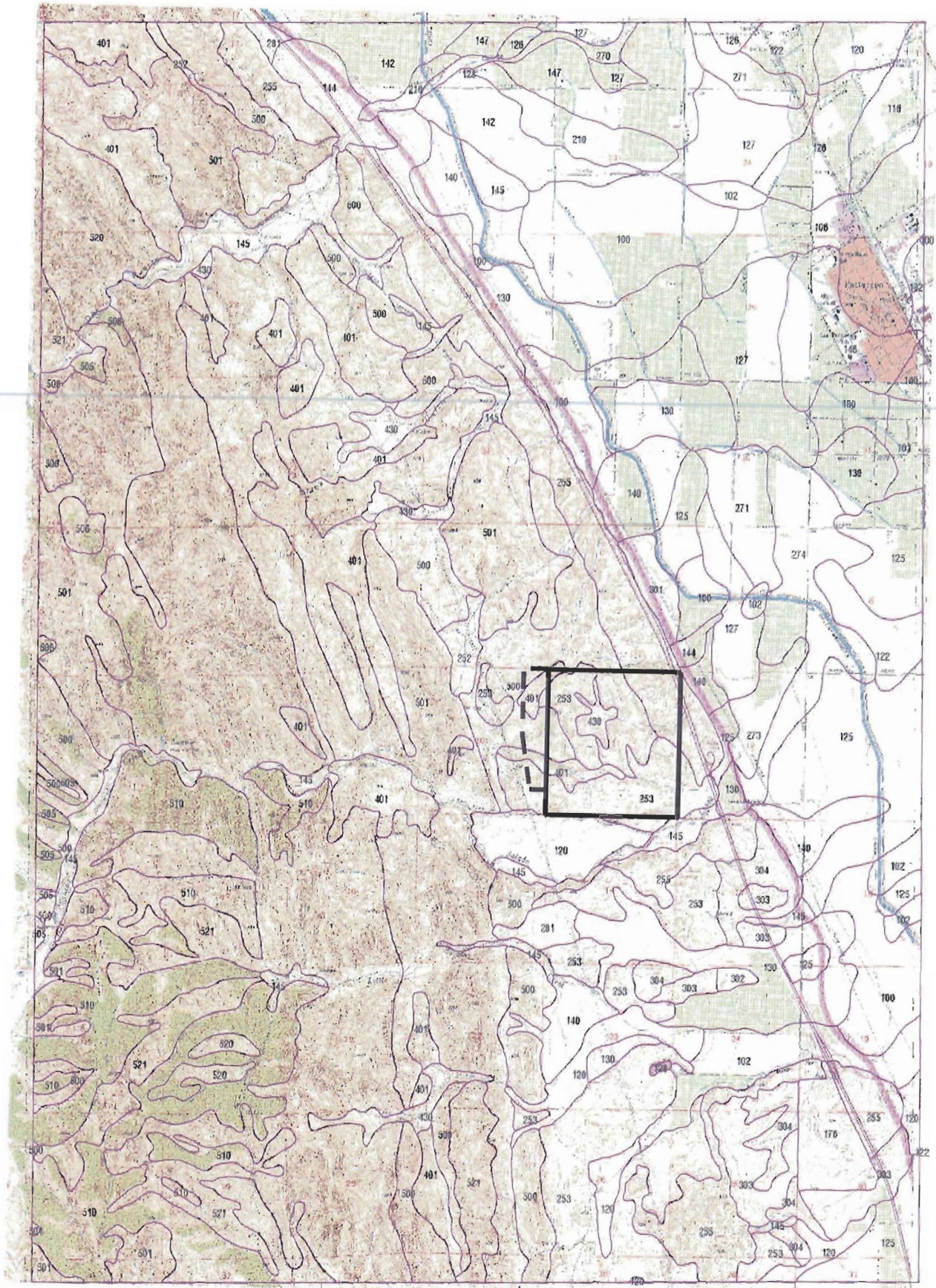
ROAD CLASSIFICATION

Main-Sub	Light-Sub
Medium-Sub	Unimproved SA
U.S. Route	State Route
Interstate Route	

GENERAL NOTES
Map promulgated 1978
Horizontal control in State Plane projection

PATTERSON, CALIF.
731-23-11-40
PRODUCTION 11-13-1978
1:50,000
PHOTOGRAPHIC 1971
DMA 1754 100 10010-100

Soil Survey of Stanislaus County, CA, Western Part - Patterson Quadrangle



1 0 1 Miles



1:48000
L-2

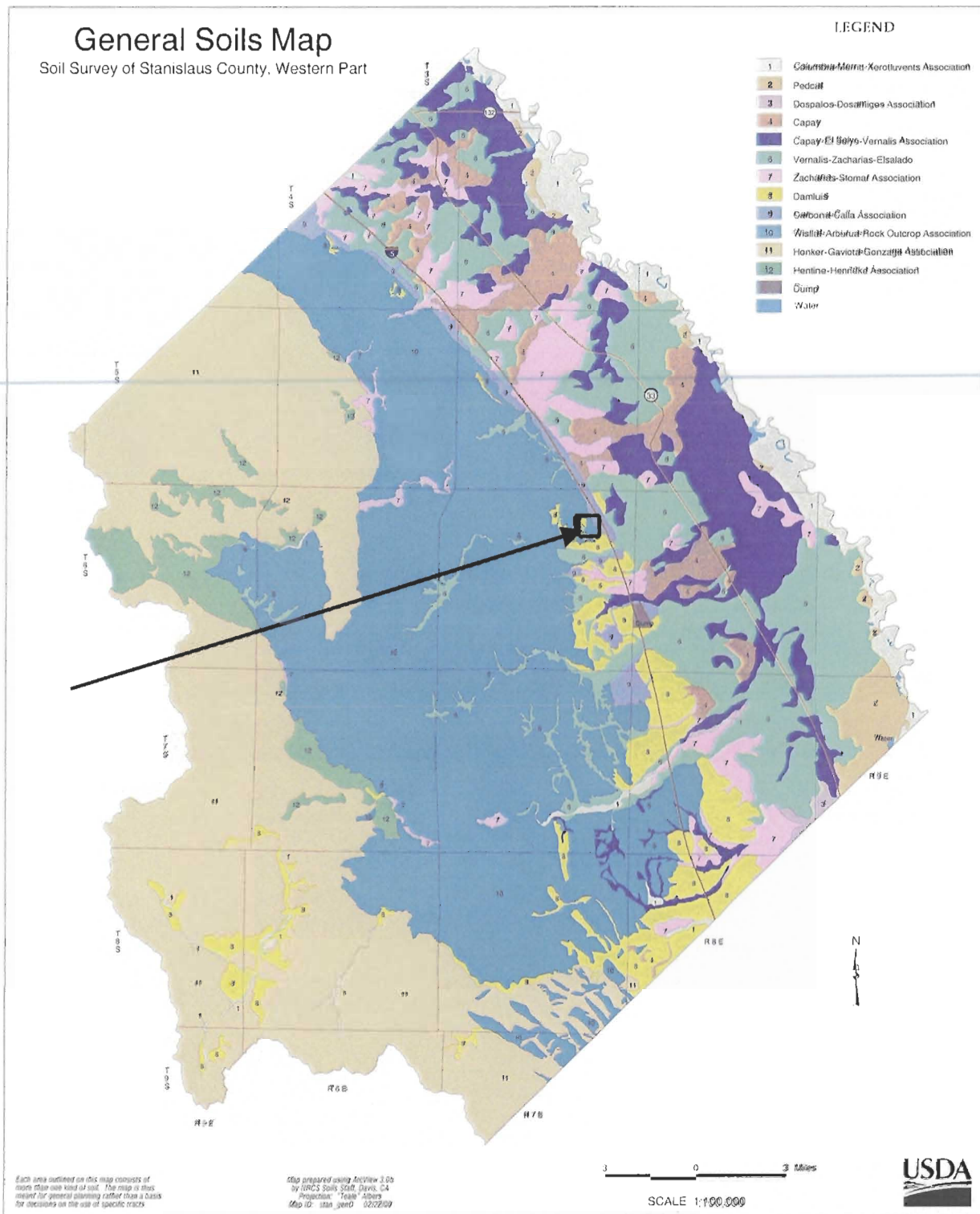
Source: USGS Digital Raster Graph (DRG), USDA NRCS SSURGO
Projection UTM, Zone 10, NAD83
Map prepared using ArcView 3.2a
USDA NRCS Soils Staff, Otis, CA; 10/2000


General Soils Map

Soil Survey of Stanislaus County, Western Part

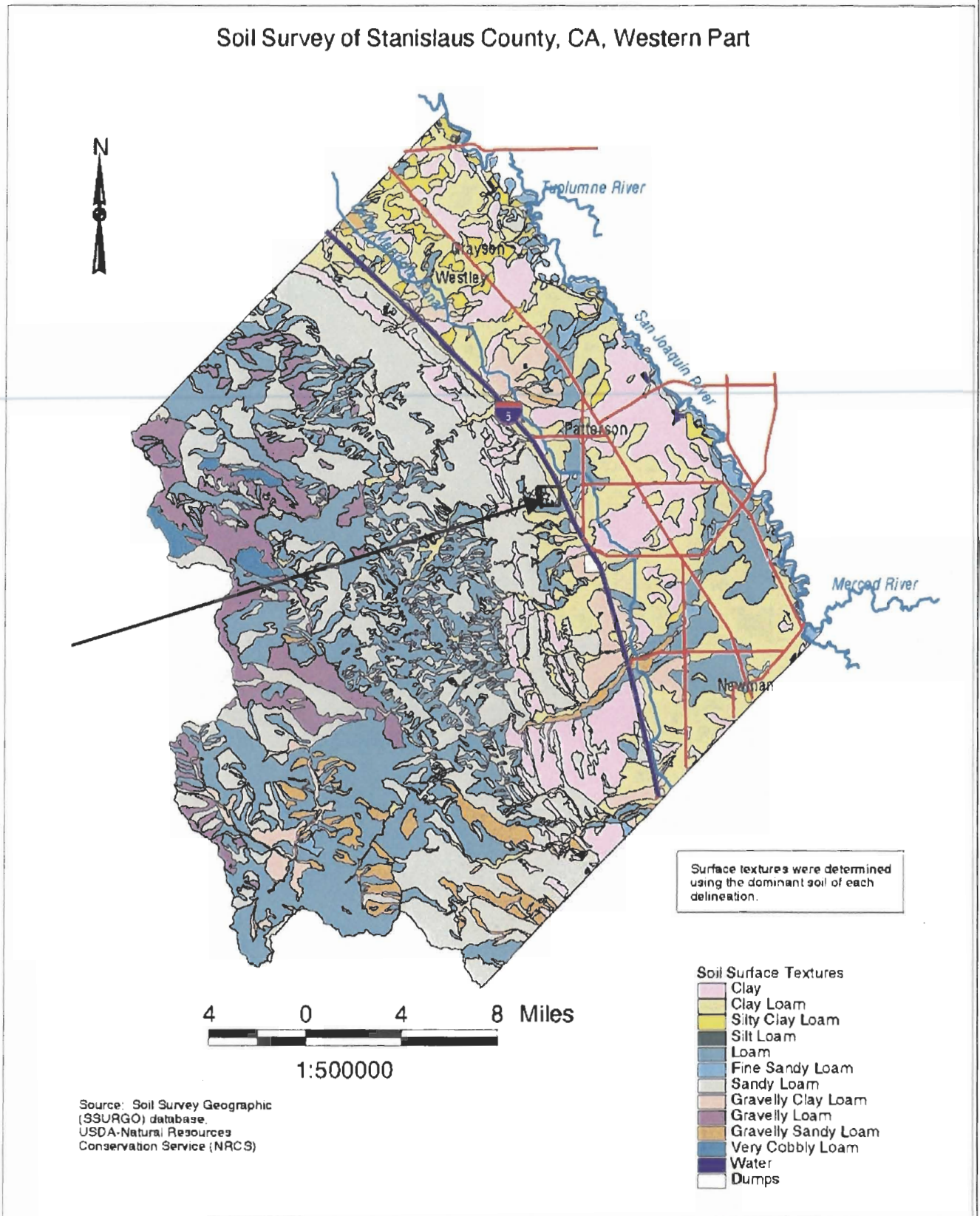
LEGEND

- 1 Columbia-Merritt-Keroluzvents Association
- 2 Pedcalf
- 3 Dospalos-Dosafleges Association
- 4 Capay
- 5 Capay-El Solys-Vernalis Association
- 6 Vernalis-Zacharias-Elsalado
- 7 Zacharias-Stomat Association
- 8 Damlus
- 9 Gwbon-Galla Association
- 10 Wislat-Arbilud-Rock Outcrop Association
- 11 Honker-Gaviota-Gonzaga Association
- 12 Hentine-Hentilud Association
- 13 Dump
- Water



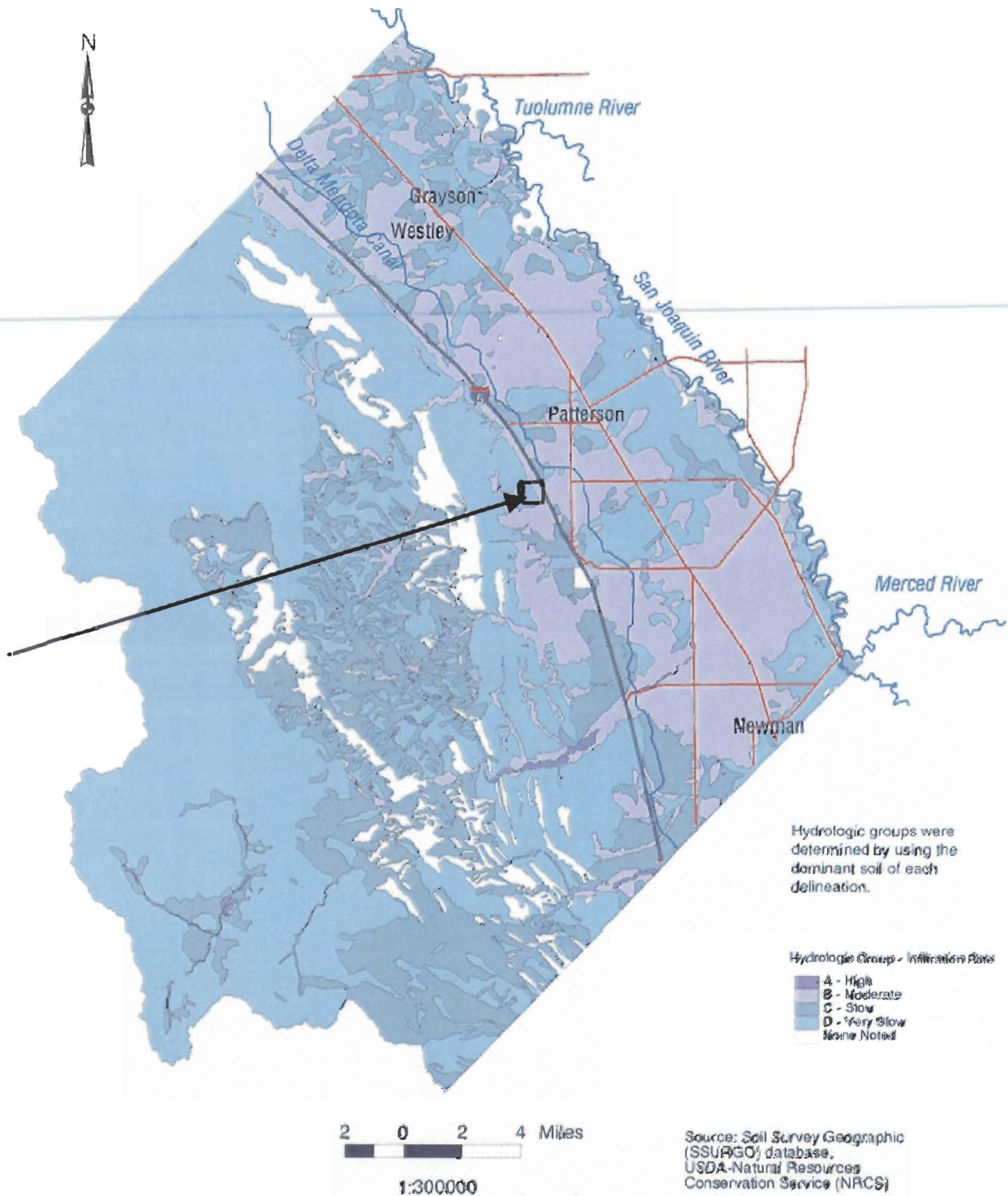
 = Approximate location of Stanislaus Bomb Target

Soil Survey of Stanislaus County, CA, Western Part



☐ = Approximate location of Stanislaus Bomb Target

Soil Survey of Stanislaus County, CA, Western Part Hydrologic Groups



☐ = Approximate location of Stanislaus Bomb Target

NAPP

6351-83

05-22-93



Additional Lands

Main Target

Oak Flat Road

Delta-Mendota Canal

California Aqueduct

US Interstate 5

Crows Landing

The additional lands were added for a safety buffer zone when the SI team discovered that the main target was located on the edge of the original 640 acres. Subsurface metallic anomalies were noted to the west and northwest of the main target.

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APPENDIX M

ARCHIVE SEARCH REPORT CORRESPONDENCE

(Not used in this report)

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APPENDIX N

PROJECT AREA BIBLIOGRAPHY

APPENDIX N
PROJECT AREA BIBLIOGRAPHY

Document ID	Project Area(s)	OE Classification	Document Name	Document Date	Document Source	Description and Comments
1	A, B, C, D and E	Confirmed	Real Estate Activity Concerning Air Facilities	21 November 1944	NARA, Pacific Region, San Francisco, California	F-4, Identifies targets associated with Crows Landing
2	A, B, C, D and E	Confirmed	History, U.S. Naval Auxiliary Air Station, Crows Landing, California	June 1945	Naval Historical Center, Aviation History Office	F-5, describes target as dive and glide bombing target.
3	A, B, C, D and E	Confirmed	War History, U.S. Naval Auxiliary Air Station, Crows Landing, California, June to September 1945	September 1945	Naval Historical Center, Aviation History Office	F-6, states that an FM (Wildcat) crashed in target area while bombing.
4	A, B, C, D and E	Confirmed	Organization Chart, Naval Air Bases, 12 ND	July 1945	NARA Archives II, College Park, MD	F-7, List of ranges and targets and associated with Naval Air Stations
5	A, B, C, D and E	Confirmed	Bombing Target List Naval Air Bases, Twelfth Naval District	Date unknown	NARA, Pacific Region, San Francisco, California	F-13, lists the bombing targets of air stations within the Twelfth Naval District.

N

ORDNANCE AND EXPLOSIVES
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APPENDIX O

REPORT DISTRIBUTION LIST

APPENDIX O

REPORT DISTRIBUTION LIST

I - Final Report II - Findings Report III - Routed Final Report	I	II	III
Commander, U.S. Army Corps of Engineers Engineering & Support Center, Huntsville ATTN: CEHNC-ED-SY-A (Mardis) P.O. Box 1600 Huntsville, Alabama 35807-4301	2	-	-
Commander, U.S. Army Engineer Division Mississippi Valley ATTN: CEMVD-MD-P (Shelton) PO Box 80 Vicksburg, MS 39181-0080	-	-	-
Commander, Defense Ammunition Center ATTN: SOSAC-ESL McAlester, OK 74501	2	-	-
Commander, U.S. Army Health Clinic ATTN: MCXP-PMA (Platt) Rock Island Arsenal Rock Island, Illinois 61201	-	-	-
Commander, U.S. Army Engineer Sacramento District ATTN: CESP-K-PM-H (Vincent) Sacramento, CA 95814-2922	2	-	-
Commander, U.S. Army Engineer District, Rock Island P.O. Box 2004 Rock Island, Illinois 61201			
Internal			
CEMVR-ED	-	-	1
-ED-D	-	-	1
-ED-DO	3	-	-

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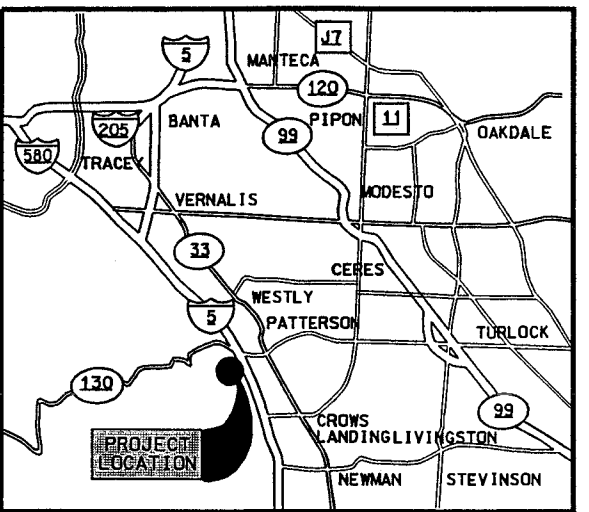
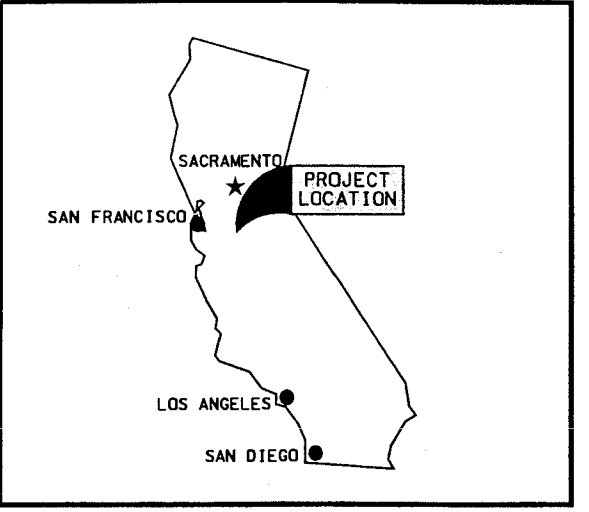
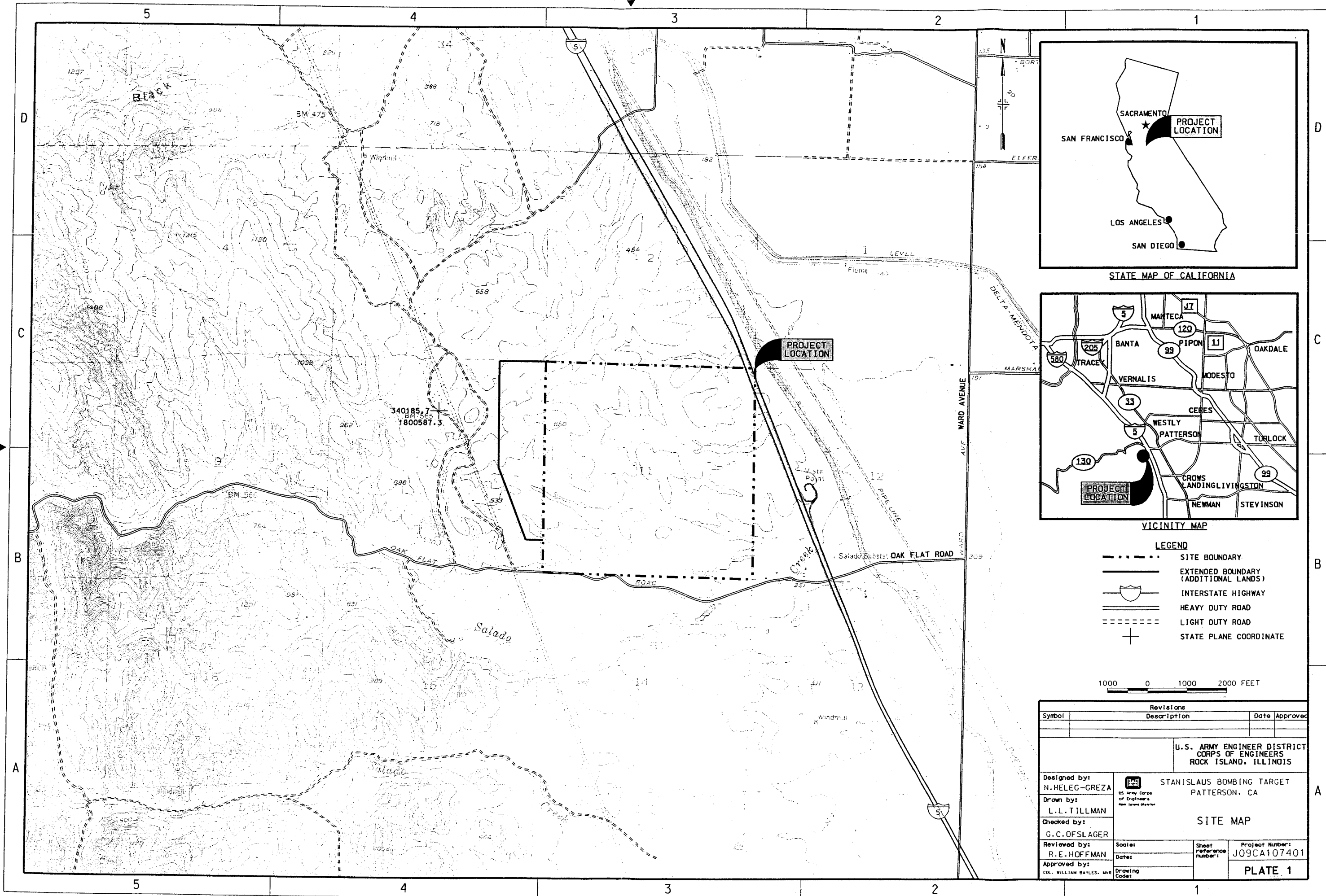
REPORT PLATES

REPORT PLATES

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
1. SITE MAP
2. TARGET LAYOUT CIRCA 1945
3. OE PROJECT AREAS / CURRENT OWNERSHIP
4. PHOTOGRAPH LOCATIONS

13-MAY-2002 08:07
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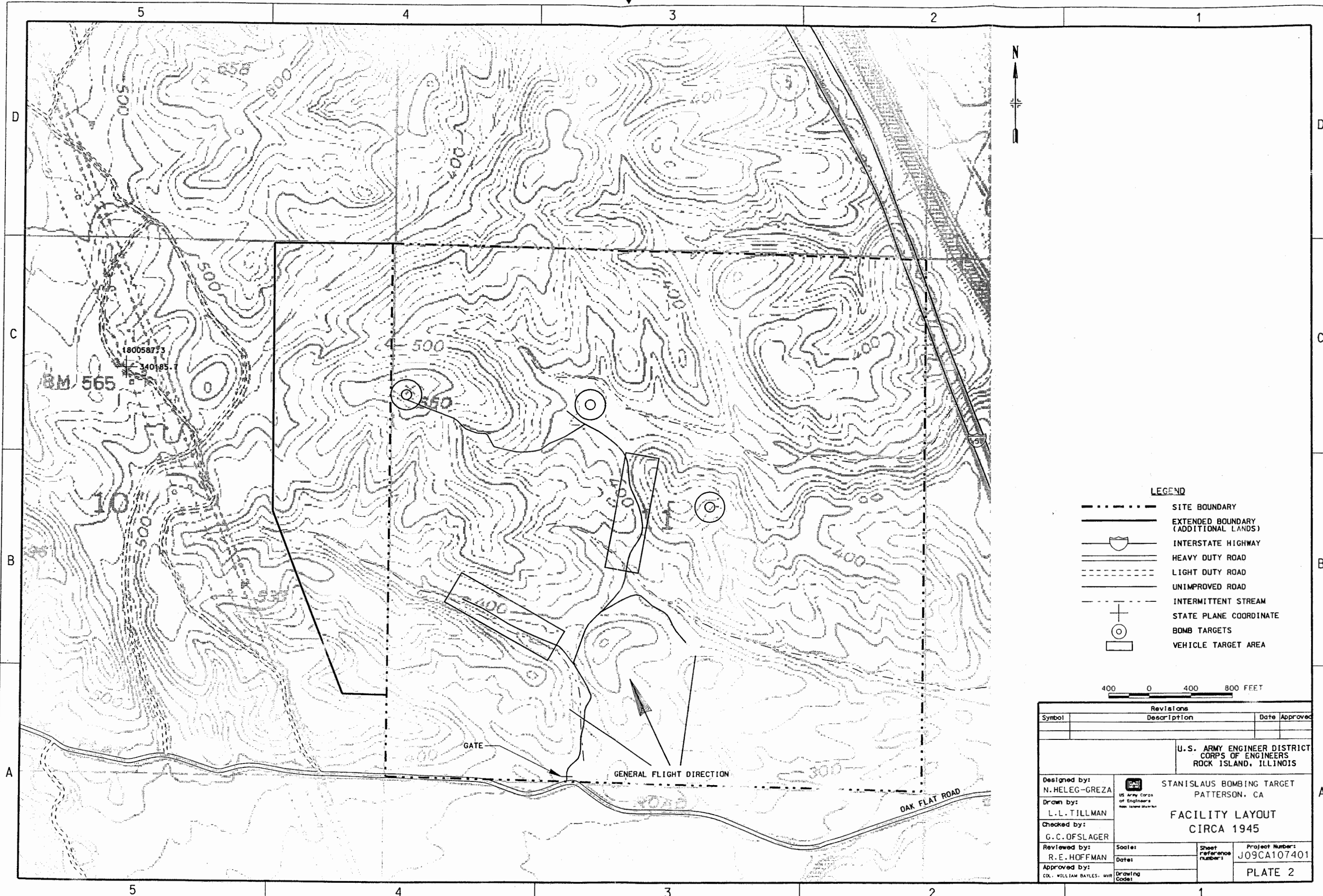


- LEGEND**
- SITE BOUNDARY
 - - - - - EXTENDED BOUNDARY (ADDITIONAL LANDS)
 - == INTERSTATE HIGHWAY
 - ==== HEAVY DUTY ROAD
 - LIGHT DUTY ROAD
 - + STATE PLANE COORDINATE

1000 0 1000 2000 FEET

Revisions		Date	Approved
Symbol	Description		
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS ROCK ISLAND, ILLINOIS			
Designed by: N. HELEG-GREZA	 STANISLAUS BOMBING TARGET PATTERSON, CA	SITE MAP	
Drawn by: L.L. TILLMAN			
Checked by: G.C. OFSLAGER			
Reviewed by: R.E. HOFFMAN	Scales: Dates:	Sheet reference number:	Project Number: JO9CA107401
Approved by: COL. WILLIAM BAYLES, MVR	Drawing Code:		PLATE 1


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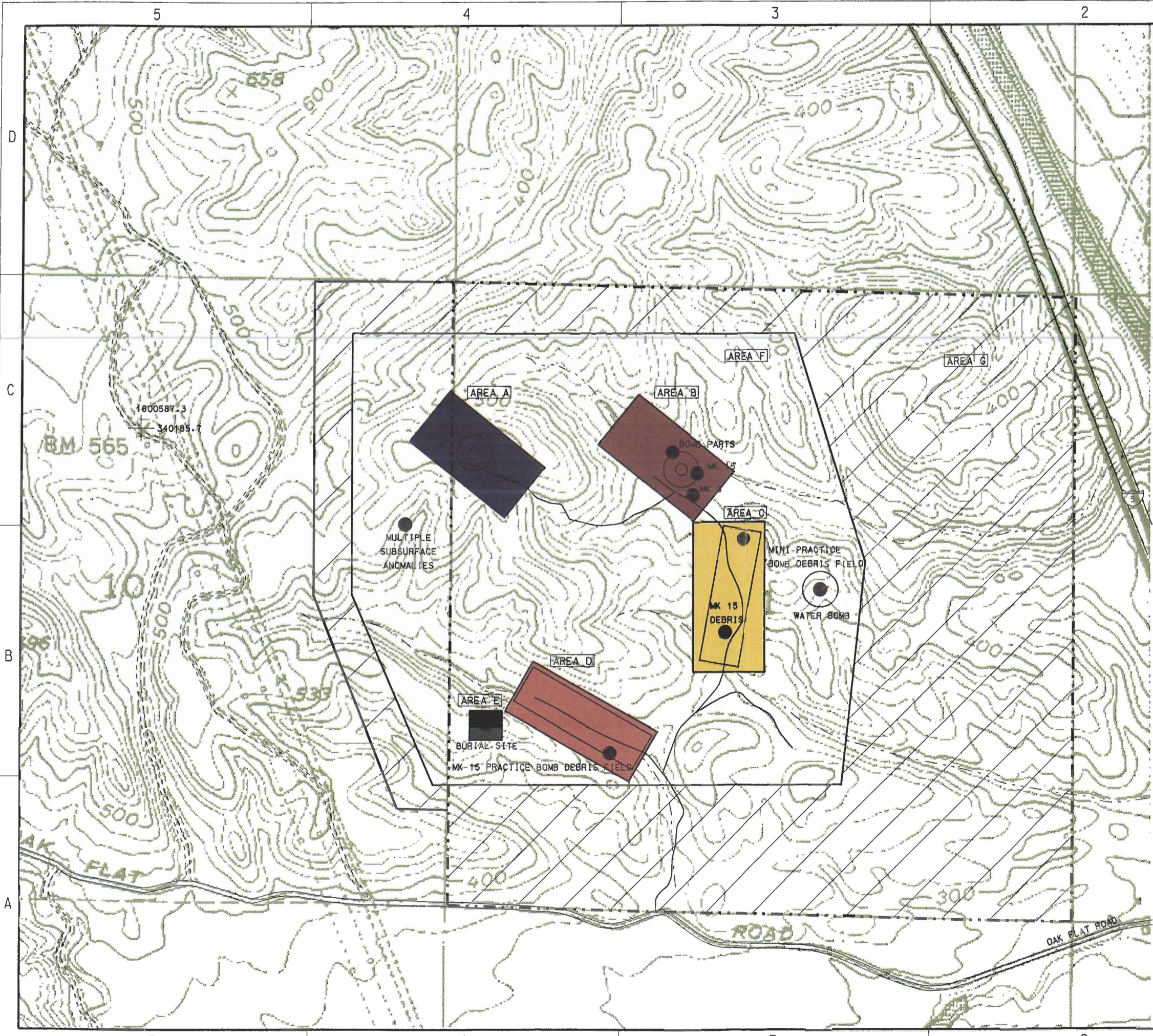


LEGEND

- SITE BOUNDARY
- EXTENDED BOUNDARY (ADDITIONAL LANDS)
- INTERSTATE HIGHWAY
- HEAVY DUTY ROAD
- LIGHT DUTY ROAD
- UNIMPROVED ROAD
- - - - - INTERMITTENT STREAM
- + STATE PLANE COORDINATE
- BOMB TARGETS
- VEHICLE TARGET AREA

400 0 400 800 FEET

Revisions		Date		Approved	
Symbol	Description				
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS ROCK ISLAND, ILLINOIS					
Designed by: N. HELEG-GREZA Drawn by: L. L. TILLMAN Checked by: G. C. OFSLAGER Reviewed by: R. E. HOFFMAN Approved by: COL. WILLIAM BAYLES, MWR	 STANISLAUS BOMBING TARGET PATTERSON, CA FACILITY LAYOUT CIRCA 1945	Scale: Dates: Drawing Code:	Sheet reference number: Project Number: J09CA107401	PLATE 2	



OE PRESENCE			
AREA	DESCRIPTION	PRESENCE	ACREAGE
A	BOMB TARGET	CONFIRMED	13
B	BOMB TARGET	CONFIRMED	13
C	VEHICLE TARGET	CONFIRMED	18
D	VEHICLE TARGET	CONFIRMED	13
E	SUSPECTED BURIAL SITE	POTENTIAL	3
F	SAFETY BUFFER ZONE	POTENTIAL	253
G	REMAINING LANDS	NONE	398
TOTAL ACREAGE			711

NOTE: ENTIRE SITE AREA IS OWNED BY STANLEY COX.

LEGEND

- SITE BOUNDARY
- EXTENDED BOUNDARY (ADDITIONAL LANDS)
- ANOMALIES
- ⊖ INTERSTATE HIGHWAY
- == HEAVY DUTY ROAD
- - - LIGHT DUTY ROAD
- UNIMPROVED ROAD
- - - INTERMITTENT STREAM
- + STATE PLANE COORDINATE

400 0 400 800 FEET

Revisions		Date	Approved
Symbol	Description		

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
ROCK ISLAND, ILLINOIS

Designed by: N. HELEG-GREZA
Drawn by: L.L. TILLMAN
Checked by: G.C. OFSLAGER
Reviewed by: R.E. HOFFMAN
Approved by: COL. WILLIAM BAYLES, WVR

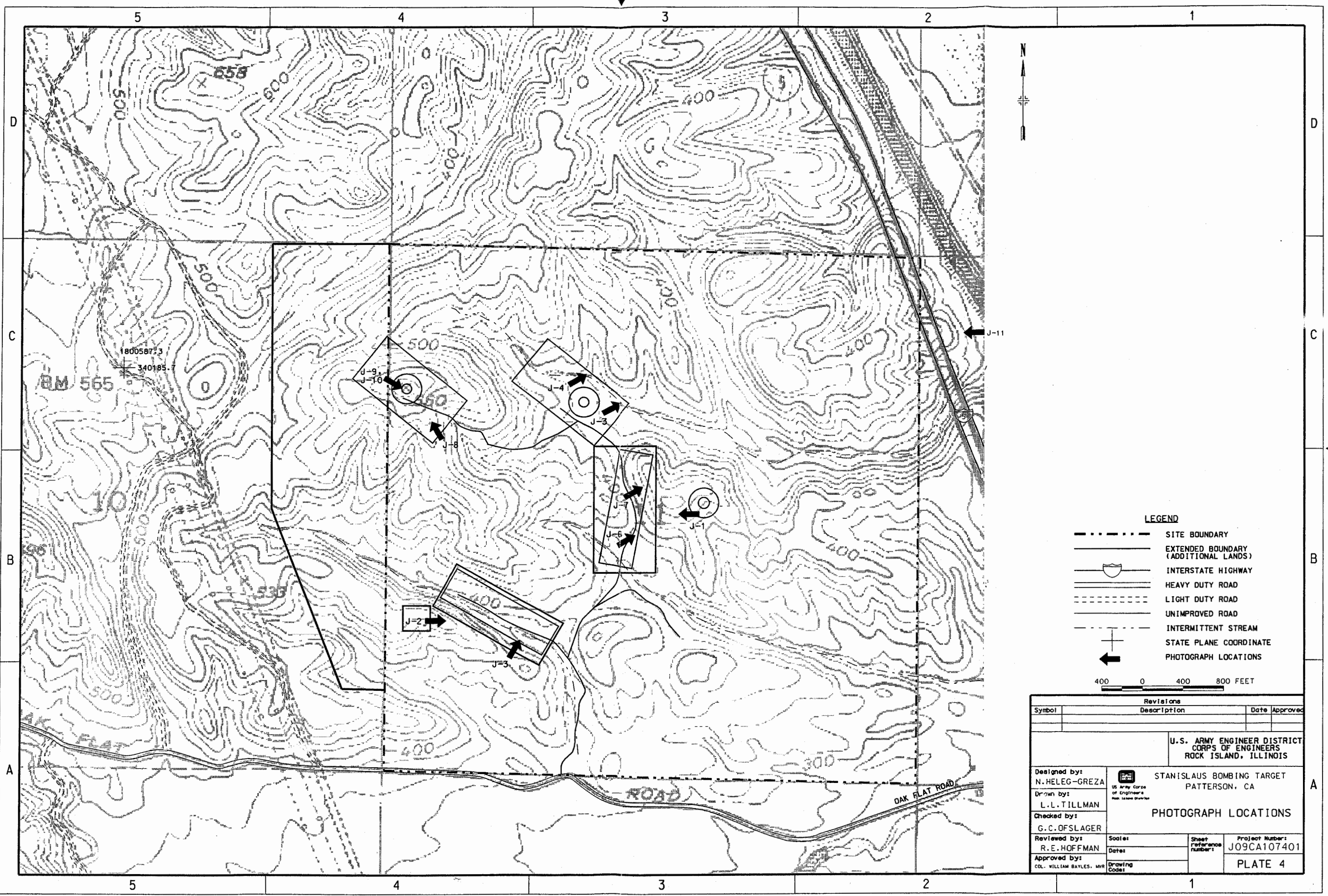
STANISLAUS BOMBING TARGET
PATTERSON, CA

OE PROJECT AREAS/
OWNERSHIP

Scale: _____
Date: _____
Drawing Code: _____

Sheet reference number: _____
Project Number: JO9CA107401
PLATE 3

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LEGEND

- SITE BOUNDARY
- EXTENDED BOUNDARY (ADDITIONAL LANDS)
- INTERSTATE HIGHWAY
- HEAVY DUTY ROAD
- LIGHT DUTY ROAD
- UNIMPROVED ROAD
- INTERMITTENT STREAM
- + STATE PLANE COORDINATE
- ← PHOTOGRAPH LOCATIONS

Revisions		Date		Approved	
Symbol	Description				
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS ROCK ISLAND, ILLINOIS					
Designed by: N. HELEG-GREZA		STANISLAUS BOMBING TARGET PATTERSON, CA			
Drawn by: L.L. TILLMAN		PHOTOGRAPH LOCATIONS			
Checked by: G.C. OFSLAGER		Reviewed by: R.E. HOFFMAN		Project Number: J09CA107401	
Approved by: COL. WILLIAM BAYLES, MWR		Scale: Dates:		Sheet Reference Number: PLATE 4	
		Drawing Code:			