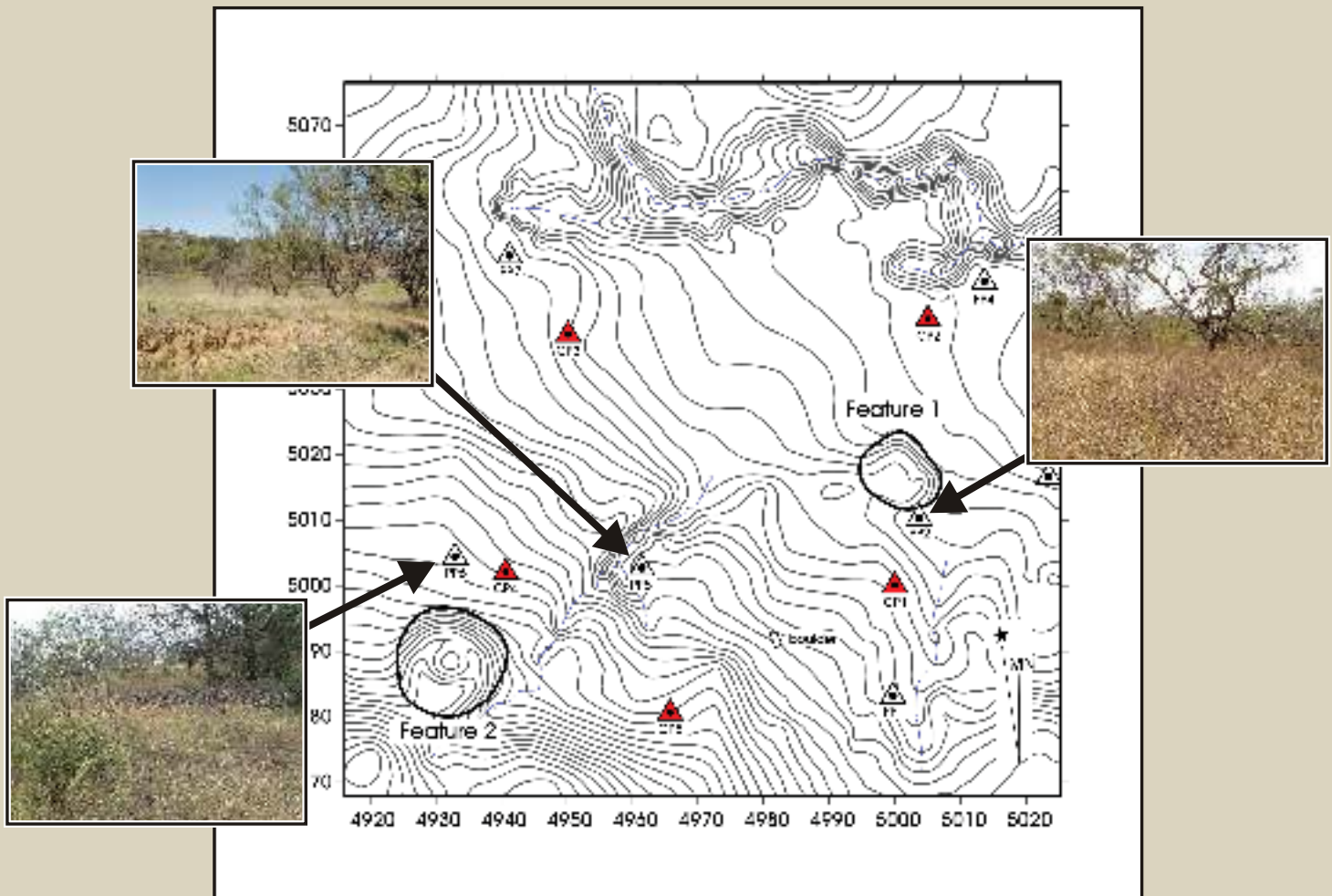


Cultural Resource Management of Eligible Archaeological Sites on Texas Military Forces Facilities Using a Photopoint Monitoring System

by
Cynthia Moore Munoz



Principal Investigator
Raymond P. Mauldin

Restricted

Prepared for:
Texas Adjutant General's Department
P.O. Box 5218
Austin, Texas 78763-5218



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Prepared by:
Center for Archaeological Research
The University of Texas at San Antonio
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San Antonio, Texas 78249-1644
Archaeological Report, No. 437

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Abstract:

From November 2007 to August 2012, the Center for Archaeological Research (CAR) of The University of Texas at San Antonio (UTSA) designed, implemented, and tested an archaeological site monitoring system, consisting of standardized photo documentation and recording procedures. The system was designed for archaeological sites recommended as eligible for listing on the National Register of Historic Places (NRHP) located on Texas Military Forces' (TXMF) training facilities. These facilities are Camp Bowie, Camp Mabry, Camp Maxey, Camp Swift, Eagle Mountain Lake Training Site, and Fort Wolters. The work, performed to fulfill contract requirements with the TXMF's Adjutant General's Office, was performed under interagency cooperation agreement TX12-ENV-07. Dr. Steve Tomka, CAR Director, acted as Principal Investigator, Dr. Raymond Mauldin, CAR Assistant Director, served as Project Manager, and Cynthia Moore Munoz acted as the Project Archaeologist.

The goal of the monitoring system is to periodically revisit and utilize photopoint documentation on all TXMF eligible sites. Information gained from periodic monitoring can be used to assess and quickly address threats and changes to important cultural resources. This report summarizes the results of the establishment of the photopoint system.

Forty-five sites on the training facilities are recommended as eligible for the NRHP. To date, the CAR has set up the monitoring system on 37 of the 45 sites. One hundred and five photopoints were used to photo document the 37 sites. The CAR recommends periodic monitoring on all the eligible archaeological sites, as well as the establishment of the monitoring system on the eight remaining sites, 41TV1667 on Camp Mabry, 41PR88 on Fort Wolters, 41BP776 and 41BP802 on Camp Swift, and 41BR270, 41BR299, 41BR438, and 41BR477 on Camp Bowie.

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Chapter 1: Introduction

The Center for Archaeological Research (CAR) of The University of Texas at San Antonio (UTSA) was contracted by the Texas Military Forces' (TXMF) Adjutant General's Office to develop and implement a photopoint monitoring program to document the condition of eligible archaeological sites on TXMF facilities. The project area includes all TXMF facilities in Texas with sites deemed eligible for the National Register of Historic Places (NRHP). Of the eight military bases, eligible sites are present at six: Camp Bowie, Camp Mabry, Camp Maxey, Camp Swift, Eagle Mountain Lake Training Site, and Fort Wolters (Figure 1-1). The project was performed under interagency cooperation agreement TX12-ENV-07 401-2-3626 with Dr. Steve Tomka, CAR Director, serving as Principal Investigator, Dr. Raymond Mauldin, CAR Assistant Director, as Project Manager, and Cynthia Moore Munoz as Project Archaeologist.

Photopoint monitoring provides the TXMF with a user-friendly, visually communicative means of monitoring targeted cultural resources. Photopoint monitoring is designed to assist the Cultural Resource personnel in documenting conditions of these resources before and after changes occur as well as the trends that occur over time. Once the initial setup is complete, the system is easy to learn and, because it requires few pieces of equipment, it is cost effective. Standardized and replicable methods result in a photographic time-series that provides a long-term visual record of site conditions. Quantitative questions on the monitoring forms reduce subjective assessments of site conditions, e.g., a standardized measurement required on the form allows the detection of quantitative changes in soil erosion.

The photopoint system is an addition to a Microsoft® Access/GIS database designed as an interactive tool for managing, updating, and searching the archaeological records pertaining to sites on TXMF facilities. The database contains numerous forms and reports allowing data to be entered, edited, and displayed in an easy to use customized format. In addition, the database consists of multiple queries and macros enabling users to easily search and retrieve archaeological site data reports based on multiple parameters. The photopoint

monitoring element consists of a series of forms and reports that are designed to document the condition of TXMF eligible archaeological sites. Forms, queries, and reports for updating this information are included in the database.

The photopoint system was set up on the six facility's eligible sites from November 2007 to August 2012. Selected sites were revisited during this time period to assess the effectiveness of the system. The goal of the project is to periodically revisit and utilize the photo system on all TXMF eligible sites. Information gained from periodic monitoring can be used to assess and quickly address changes and threats to important cultural resources.

This report is organized into five chapters. Chapter 2 provides a brief background on TXMF facilities and eligible archaeological sites. Chapter 3 presents the methodology of photopoint setup and maintenance. Examples of the documentation and photo records resulting from the system are presented in Chapter 4. Chapter 5 summarizes the work and discusses future monitoring recommendations for TXMF facilities.

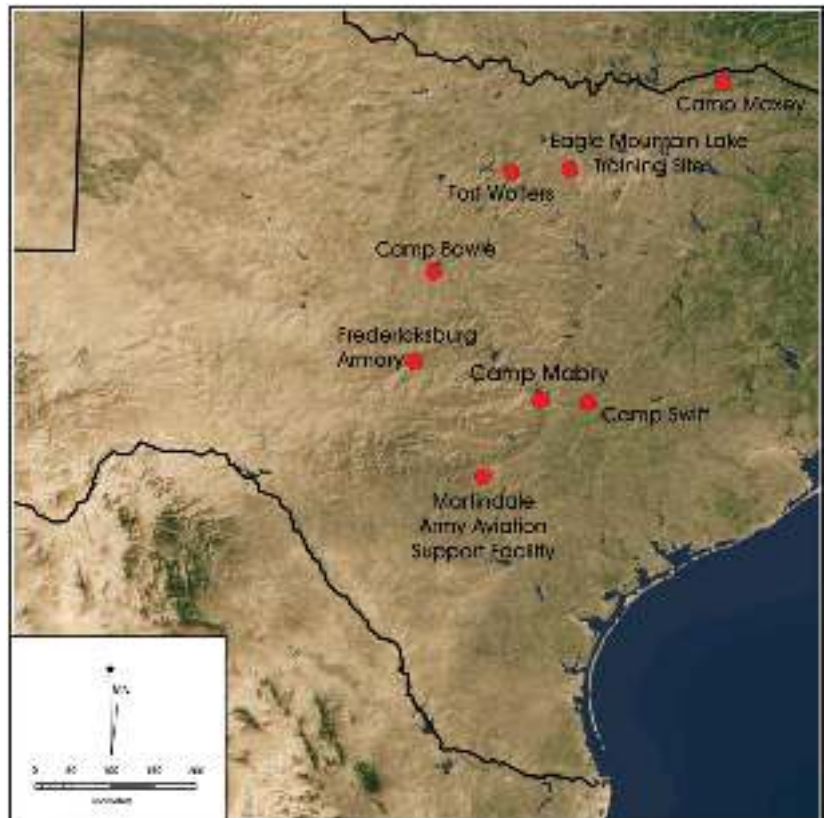


Figure 1-1. Map of TXMF facilities.

Chapter 2: Texas Military Forces Facilities

This chapter presents a brief description of Camp Bowie, Camp Mabry, Camp Maxey, Camp Swift, Eagle Mountain Lake Training Site, and Fort Wolters and a discussion of the eligible sites on each. Because the photopoint monitoring system is designed for archaeological sites deemed eligible for the NRHP, two TXMF facilities, Fredericksburg Armory with two ineligible sites and Martindale Army Aviation Support Facility with one potentially eligible site, are not discussed in this report. Table 2-1 presents eligibility data for each facility.

Camp Mabry

Established in 1892 as the first permanent summer encampment ground of the Texas Volunteer Guard, Camp Mabry was built on 85 acres (34 hectares) in the City of Austin in Travis County. “Sham battles” fought at the facility from its inception until 1905 provided the volunteers with combat training and, by attracting large numbers of spectators from all over the state, helped to raise money to improve and enlarge Camp Mabry (Austin Daily Statesman 1894; Leffler 2003). In 1905 the Texas Volunteer Guard was reorganized as the Texas National Guard. By 1913 the training facility had expanded to approximately 400 acres (162 hectares) and contained permanent buildings and target ranges. As a result of national military reforms and professional guidance, Camp Mabry evolved into an important military post providing professional training activities. Currently the 375 acre (152 hectares) facility is the headquarters of the Texas National Guard (Jones and Leffler 2003).

Camp Mabry is within the Colorado River Basin on the Balcones Fault zone of Central Texas. For a comprehensive

review of the geology at Camp Mabry including discussions of hydrology, the Balcones Fault and Escarpment, and bedrock soil formation see Jones (2003). Because the facility is located on a transitional geologic zone, it lies at the intersection of two physiographic provinces, the eastern portion on the Blackland Prairie and the western portion on the Edwards Plateau.

Six Section 106 surveys have been completed at Camp Mabry over the past two decades, including one by Texas Historical Commission (THC) personnel (THC 1992), four by Texas Army National Guard (AGTX) personnel (AGTX 1994; Leshley et al. 1994; Wormser 1993e; Wormser et al. 1993), and one by the Center for Archaeological Studies (CAS) at Texas State University-San Marcos (Jones and Leffler 2003). Of the four sites recorded on Camp Mabry, one (41TV1667) is eligible for the NRHP (Table 2-2 and Figure 2-1).

41TV1667

Bisected by Barrow Brook, an ephemeral tributary of the Colorado River, site 41TV1667 is a large, multi-component, prehistoric open campsite dating from the Late and Middle Archaic to the Austin Phase (Collins 1995) of the Late Prehistoric period. Testing excavations in 2002 (Jones and Leffler 2003) revealed a burned rock oven feature with diagnostic artifacts dating to the Middle and Late Archaic periods and a subsurface hearth with Late Archaic projectile points and charcoal dated to cal. 3870-3670 BP (2 sigma, Beta 172805). The site contained extensive deposits of cultural materials extending to 1.7 m below the surface. Recovered artifacts include projectile points, bifaces, unifaces, cores, debitage, burned rock, mussel shell, bone, and a mano.

Table 2-1. NRHP Status for TXMF Archaeological Sites

Facility	NRHP Eligibility Status			Total Sites
	Not Eligible	Potentially Eligible	Eligible	
Camp Swift	235	55	16	306
Camp Bowie	171	2	18	191
Camp Maxey	119	13	7	139
Fort Wolters	49	1	2	52
Eagle Mountain Lake Training Site	12	0	1	13
Camp Mabry	2	1	1	4
Fredericksburg Armory	2	0	0	2
Martindale Army Aviation Support Facility	0	1	0	1
Totals	590	73	45	708

Table 2-2. Archaeological Investigations at Camp Mabry (Eligible Sites are in **Red** Type)

Author	Date	Report	Report Type	Investigator	Sites
THC	1992	Archaeological Survey for the Construction of a New Armory Building	Facsimile Memorandum	THC	none
Wormser, A. J., P. Powell and J. Hopkins	1993	Camp Mabry, Survey of Picnic Area, Travis County	AGTX Archeological Survey Report Form	AGTX	none
Wormser, A. J.	1993	Surface Reconnaissance of the Western Portion of Camp Mabry	AGTX Archeological Survey Report Form	AGTX	41TV 1667
Leshley, T., A. Wormser, and G. Davis	1994	Archeological Survey of a Proposed Baseball Diamond and Basketball Court at Camp Mabry in Travis County, Texas	AGTX Archeological Survey Report Form	AGTX	none
AGTX	1994	Surface Reconnaissance	AGTX Archeological Survey Report Form	AGTX	41TV1721, 1722
Jones, R. and J. Leffler	2003	Phase I and II Archeological Investigations on Camp Mabry, Travis County, Texas	CAS Archeological Studies Report No. 2	CAS	41TV 1667 , 1722, 1954

Because 41TV1667 contains multi-component deposits of cultural materials, significant burned rock features from the Middle and Late Archaic, and regionally unique geologic deposits that could provide data on site formation processes, the site yields, or may be likely to yield, information important in prehistory. Jones and Leffler (2003) recommended the site as eligible for the NRHP under Criterion D of Federal Regulation 30, CFR 60.4.

Fort Wolters

Fort Wolters is located just outside the City of Mineral Wells in Palo Pinto and Parker Counties in north-central Texas. Originally named Camp Wolters, it was established in 1925 as the summer training site for the Fifty-sixth Cavalry Brigade of the Texas National Guard. The facility increased from an initial 2,350 acres (951 hectares) to 7,500 acres (3,035 hectares) during World War II at which time it functioned as an infantry replacement training camp. The facility also housed German prisoners of war (Krammer 1996). Camp Wolters was deactivated after the war but was reopened as Wolters Air Force Base in 1951 in response to tensions between the USA and the USSR, i.e., the Cold War. In 1956 the facility became the Primary Helicopter Center of the United States Army, functioning until 1975 as the

training site for all helicopter pilots for the Vietnam War. The base was renamed Fort Wolters in 1963 and deactivated in 1975 (Brownlow et al. 1999). Today the facility consists of approximately 4,000 acres (1,619 hectares).

Fort Wolters sits on the southeastern edge of the Grand Prairie physiographic region of Texas (Wermund 1996). The facility is within 19 km of the Brazos River and is on the Western Cross Timbers natural region. Mauldin and Figueroa (2006) present a detailed analysis of the flora and fauna of this region debating previous work that suggests the region had substantial resources for hunting and gathering. They present data arguing that the region supported limited plant species and reduced animal diversity. However, Mauldin and Figueroa (2006) note that bison should have been available at various periods in the Fort Wolters' area. Pedogenic carbon isotope data from the Aubrey site (Ferring 2001; Humprey and Ferring 2001) and pollen data from Boriack (Bousman 1998) and Patschke Bogs (Camper 1991; Nickels and Mauldin 2001) reviewed by Mauldin and Figueroa (2006) point to grassland settings in the Early and Middle Holocene into much of the Late Holocene. Grassland environs would be amenable to large mammals such as bison, but would restrict the diversity and density of plant resources for hunting and gathering.

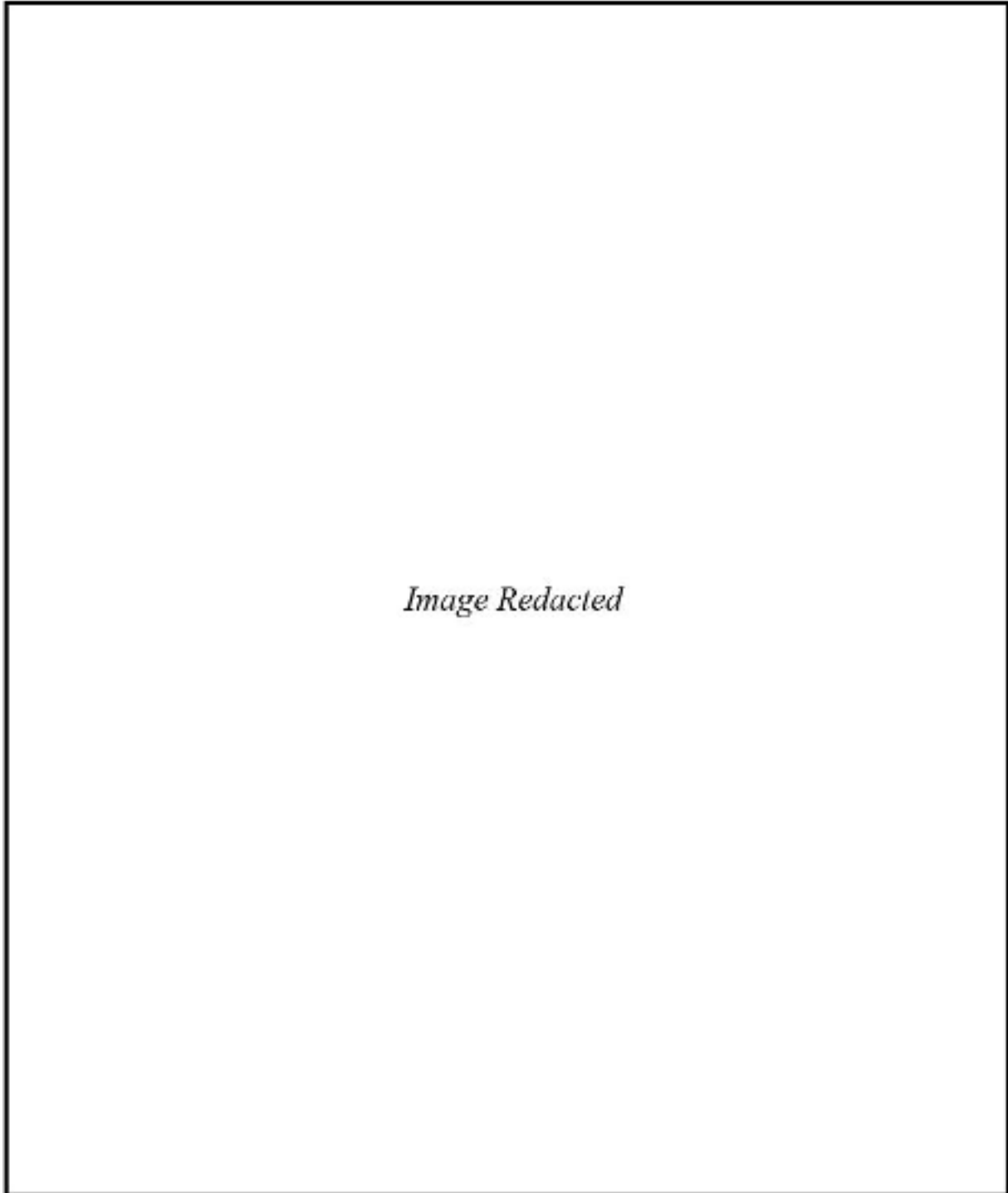


Figure 2-1. *Eligible and potentially eligible sites on Camp Mabry.*

Six Section 106 surveys have been undertaken on Fort Wolters over the past thirty-one years (Table 2-3). AGTX personnel completed five surveys (Cojeen 1997; Davis 1994c; Leshley 1994a, b; Skinner 1982) and the Texas Archeological Research Laboratory (TARL) of The University of Texas at Austin completed one (Brownlow et al. 1999). One Phase I testing project of four sites (Brownlow 2001), one emergency salvage project (Brownlow and Terneny 1999), and one data recovery project of 41PR44 (Mauldin and Figueroa 2006) were also completed. Two of the fifty-two sites (41PR88 and 41PR90) recorded on Fort Wolters are eligible for the NRHP (Figure 2-2).

41PR88

Site 41PR88 was initially noted when human bone was found eroding out of a cutbank of Rippy Branch at its intersection with an unnamed drainage. Upon further inspection of the creek bank, hearth features were discovered sitting in a dark sediment layer (Brownlow et al. 1999). One 50-x-50 cm test unit, excavated to 1.8 m below the surface (mbs) to explore the deposits, produced a dozen pieces of debitage. One sample of charcoal from the hearth (Zone 4) produced a date at 2 sigma of cal. 500-285 BP. Two pieces of charcoal (Zone 1) and one specimen of human bone (Zone 5) removed from the test

Table 2-3. Archaeological Investigations at Fort Wolters (Eligible Sites are in **Red** Type)

Author	Date	Report	Report Type	Investigator	Sites
Skinner, S. A.	1982	Cultural Resource Survey at Fort Wolters, Texas	AGTX Archeological Survey Report Form	AGTX	none
Davis, G. P.	1994	Archaeological Survey for Tree Clearance at an Armored Maneuver Area at Fort Wolters, Parker County, Texas	AGTX Archeological Survey Report Form	AGTX	none
Leshley, C. M.	1994	Archaeological Survey for the Proposed Selective Species Tree Removal in Armored Maneuver Area I at Fort Wolters, Parker County, Texas	AGTX Archeological Survey Report Form	AGTX	none
Leshley, C. M.	1994	Archaeological Survey for the Proposed Selective Species Tree Removal in Armored Maneuver Area III at Fort Wolters, Parker County, Texas	AGTX Archeological Survey Report Form	AGTX	41PR33-35
Cojeen, C. A.	1997	Report on the Archaeological Survey of the Proposed U.S.A. #1 Well Pad and Access, for Dallas Production Company, Inc., Located on U.S. Army Lands in Parker County, Texas	AGTX Archeological Survey Report Form	AGTX	none
Brownlow, R.K., D. Prikryl, T. Gustavson, J. Garner, and M.B. Collins	1999	An Intensive Cultural Resources Survey of the Texas Army National Guard's Fort Wolters Facility, Parker and Palo Pinto Counties, Texas	TARL Studies in Archeology 32	TARL	41PR44-87, 88, 90 , 41PP346, 347
Brownlow, R. K. and T. Terneny	1999	Letter Report on the Emergency Salvage of Human Remains from Site 41PR88 on the Fort Wolters Training Site, Parker County, Texas	AGTX Archeological Survey Report Form	AGTX	41PR88
Brownlow, R.K.	2001	The Testing of Four Sites at the Texas Army National Guard's Fort Wolters Facility, Parker County, Texas	TARL Studies in Archeology 37	TARL	41PR44, 49, 77, 90
Mauldin, R. P. and A. Figueroa	2006	Data Recovery Excavations at 41PR44, Fort Wolters, Parker County, Texas	CAR Archaeological Survey Report No. 369	CAR	41PR44

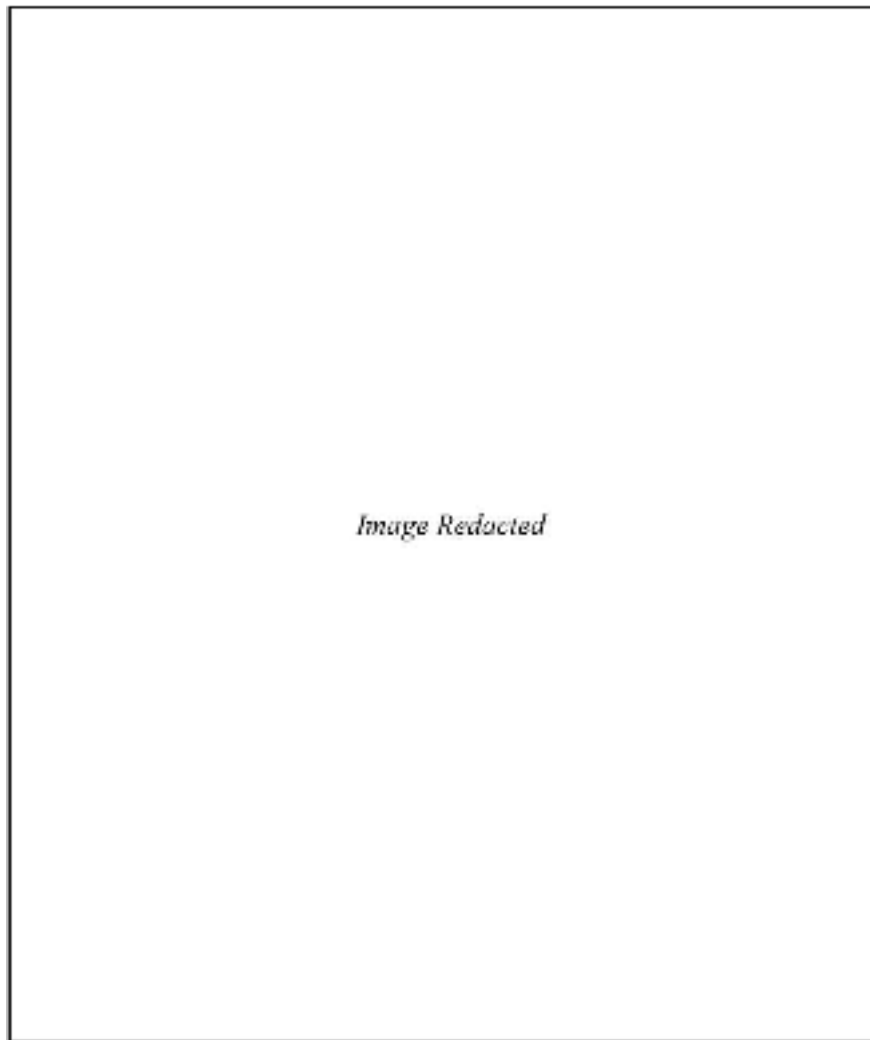


Figure 2-2. Eligible and potentially eligible site on Fort Wolters.

unit produced dates at 2 sigma of cal. 270-195 BP, 145-10 BP, and 1075-910 BP, respectively. The age range suggests that the burial occurred before the occupation associated with the hearth. Brownlow et al. (1999) conclude that the site was intensely occupied during the Late Prehistoric and likely into the Protohistoric period. The human remains, consisting of a partial skeleton (MNI=1), were repatriated (Brownlow and Terneny 1999). Site 41PR88 was recommended as eligible for the NRHP due to the possibility of additional unexcavated human remains.

41PR90

Deeply buried above an extant pool on the Rippy Branch, site 41PR90 consists of five burned rock features and a sparse distribution of artifacts (Brownlow 2001). A Scallorn point, 1.67 m below the datum (mbd), was associated with one of the features. A charcoal sample (1.8-1.9 mbd) was dated to

cal. 1510-1315 BP. The point and the ^{14}C date indicate Late Archaic and Late Prehistoric Austin Phase (Collins 1995) occupations of the site. Brownlow (2001) posits that the features' lack of charcoal, nearness to water, and the presence of ochre may support a steam bath scenario (see Black and McGraw 1985:263). Because 41PR90 is deeply buried and undisturbed and its features may indicate ritualistic activities, it is likely to yield information important to the prehistory of Parker County. Brownlow (2001) recommended the site as eligible for the NRHP.

Camp Bowie

Built in September 1940 in response to Germany's invasion of Poland and France, Camp Bowie was the first major Texas military installation constructed during the World War II era. The facility is located in north-central Texas near the City of Brownwood in Brown County. It was initially the training

facility for the Texas National Guard's 36th Infantry Division. The camp also was the site of a prisoner-of-war facility built to hold 3,000 men. By 1945 Camp Bowie covered 123,000 acres (47,766 hectares) of Brown and Mills counties (Leffler 2002). The camp was decommissioned in 1946 at the end of the war. The land was sold back to the public except for 5,411 acres (2,190 hectares) that was deeded to the Texas National Guard. Currently, Camp Bowie consists of roughly 8,940 acres (3,618 hectares).

Camp Bowie lies in the Colorado River drainage basin on the Rolling Plains physiographic region of Texas (Nance and Wermund 1993). A biological inventory of Camp Bowie compiled by the Texas Parks and Wildlife characterizes the facility as a region of mostly Live Oaks, Mesquites, and Ashe Junipers (Texas Parks and Wildlife Department [TPWD] 1994). Because multiple large burned rock middens are located on the facility, archaeology on Camp Bowie has resulted in a number of contributions to the overall understanding of these feature types in Texas (Dering 2003a, 2003b; Mauldin et al. 2003; Weston et al. 2003). Mauldin et al. (2003), in a comprehensive analysis of 19 burned rock middens on 16 sites on the facility, conclude that they were used as ovens to bake high-starch foods (i.e., eastern camas, wild onion, and dog's-tooth violet). The middens predominantly date to the Late Prehistoric period and accumulated as a result of multiple-use events over time. While previous research placed burned rock middens primarily in the Middle to Late Archaic periods (Prewitt 1981, 1985; Ricklis and Collins 1994; Weir 1976), ¹⁴C data from Mauldin et al. (2003), in conjunction with an earlier compilation of radiocarbon assays from 35 middens by Black and Creel (1997), suggest that they are primarily a Late Prehistoric occurrence. Mauldin et al. (2003) also posit that a strong association of burned rock middens with areas of oak may not be related to acorn use as previously reported (Creel 1986, 1994, 1997) but to the requirement of abundant fuel wood.

A minimum of 12 archaeological investigations have been completed at Camp Bowie since 1975 (Table 2-4). Of the 12, eight were surveys, two were testing projects, one consisted of archival research, and one was testing with archival research. Three of the surveys were completed by AGTX personnel (Powell and Wormser 1994; Alan J. Wormser 1994b; Wormser, Sullo, and Stringer 1997), one by Texas A&M (Shafer et al. 1975), one by Lonestar Archeological Services (Briggs 1992), and three by the CAR (Greaves et al. 2002; Mauldin and Broehm 2001; Wormser et al. 2001). Personnel from the CAR completed two testing projects (Mauldin et al. 2003; Weston et al. 2003) and one archival research report (Leffler 2002). One additional testing project was undertaken by personnel from SWCA Environmental Consultants (Bonine and Steely 2006). Of the 191

archaeological sites recorded at Camp Bowie, 18 are eligible for the NRHP (Figure 2-3).

Historic Sites (41BR270, 299, 438, and 477)

Four historic sites on Camp Bowie are deemed eligible for the NRHP. The sites consist of one Anglo-American homestead (41BR438) dating to 1850-1941, two series of check dams (4BR270 and 41BR477) dating to Depression Era Back-to-Work Programs, i.e., 1929-1941, and one munitions bunker (41BR299) dating to World War II (1941-1945). Five features and numerous household historic artifacts remain on what was the homestead of S. E. Lacy and family, occupied from 1882 to ca. 1910. The site (41BR438) contains the remains of a foundation-rock scatter, a limestone rock foundation with stone steps, a bell-shaped underground cistern, a dry stone boundary wall, and a stone pile of unknown function (Bonine and Steely 2006). Because the site provides information that can further the understanding of turn of the century rural homesteads by answering research questions, such as how a subterranean cistern was built in rocky soils, what was the availability of commercial goods in a rural area, and others related to household economy and rural life, Bonine and Steely (2006) recommended the site eligible to the NRHP under Criterion D.

Formed as an employment relief effort during the Great Depression, the Civilian Conservation Corps (CCC) hired war veterans and young men for state park construction projects. The work included the building of roads, utilities, and structures, as well as soil conservation projects consisting of the erection of dams, retaining walls, and terraces (Steely 1999). Two such projects resulted in two series of check dams on Camp Bowie that date to the 1930s. Site 41BR270 contains a northeast-southwest alignment of five check dams covering 183 m and 41BR477 consists of a northwest-southeast line of six dams measuring 232 m from Check dam 1 to 6. Bonine and Steely (2006) conclude that both sites have retained sufficient integrity to be deemed eligible for inclusion to the NRHP under Criteria A and D.

The final eligible historic site on Camp Bowie (41BR299) consists of a World War II munitions bunker. The large bunker, measuring 22-x-18 m, was built in 1940 and used for military training until 1947. Constructed with fortified concrete covered by a dirt berm, it was intended to contain accidental discharges of munitions. To determine the significance of the structure, Bonine and Steely (2006) conducted a comparative study of World War II era bunkers in Texas. One other bunker at Camp Bowie, nine at Camp Bullis, and two at Fort Wolters were analyzed and determined to have functioned as observation or machine gun bunkers.

Table 2-4. Archaeological Investigations at Camp Bowie (Eligible Sites are in **Red** Type)

Author	Date	Report	Report Type	Investigator	Sites
Shafer, H. J., E. P. Baxter and P. Dering	1975	1975 Brownwood Lateral Watershed, Brown County, Texas: Archaeological Survey of Floodwater Retarding Structures 1, 2, 2A, 5, 18, 24, 26A	TAMU Report No. 7	TAMU	41BR 65 , 66-70
Briggs, A. K.	1992	An Archeological Survey of Sample Areas within the Proposed Camp Bowie Acquisition Area, Near Brownwood, Brown County, Texas	LSA Report	Lonestar Archeological Services	41BR380-391
Powell, P. and A. Wormser	1994	Camp Bowie Summer AT	AGTX Archeological Survey Report Form	AGTX	none
Wormser, A.	1994	Fire Break Survey	AGTX Archeological Survey Report Form	AGTX	41BR 392 , 393-403
Wormser, A. J., D. M. Sullo, and S. C. Stringer	1997	Archaeological Investigations of Proposed Tank Training Areas at Camp Bowie, Brownwood, Texas	AGTX Archeological Survey Report Form	AGTX	41BR68-70, 87 , 227, 247, 256-263, 265, 275, 281, 283, 285, 287, 295, 297, 299 , 380-383, 387-390, 398, 401-403, 409, 411-413, 415, 422, 424, 428-429, 434, 436-437, 438 , 439-441, 443, 449-450, 452, 455, 457, 459, 469, 471-472, 473 , 474-476
Mauldin, R. P. and C. J. Broehm	2001	An Archaeological Survey of 90 Acres at Camp Bowie, Brown County, Texas	CAR Archaeological Survey Report No. 319	CAR	41BR499-501
Wormser, A. J., S. Sullo-Prewitt, D. L. Nickels, C. J. Broehm, D. D. Edmondson and R. P. Mauldin	2001	Cultural Resources Inventory of Camp Bowie, Brownwood, Texas	CAR Archaeological Survey Report No. 317	CAR	41BR 65 , 66-70, 87 , 227, 228 , 229-245, 246 , 247-249, 250 , 251-252, 253 , 254-269, 270 , 271-298, 299 , 300-301, 380-391, 392 , 393-403, 407-419, 420 , 421-432, 433 , 434-437, 438 , 439-472, 473 , 474-476, 477 , 478 , 479-480, 491, 492 , 493 , 494-496
Greaves, R. D., R. P. Mauldin and C. J. Broehm	2002	Archeological Survey of Three Land Parcels, and Shovel Testing of Four Sites at Camp Bowie, Brown County, Texas	CAR Archaeological Survey Report No. 328	CAR	41BR248, 392 , 467, 469, 471, 522 , 523

Table 2-4. Archaeological Investigations at Camp Bowie (Eligible Sites are in **Red** Type), continued....

Author	Date	Report	Report Type	Investigator	Sites
Leffler, J. J.	2002	Ranchers, Farmers, Soldiers, and the CCC: The Background for Seven Historical Sites at Camp Bowie, Brown County, Texas	CAR Archaeological Survey Report No. 325	CAR	41BR227, 266, 270 , 290, 299, 438, 477
Mauldin, R. P., D. L. Nickels, and C. J. Broehm	2003	Archaeological Testing to Determine the National Register Eligibility Status of 18 Prehistoric Sites on Camp Bowie, Brown County, Texas	CAR Archaeological Survey Report No. 334	CAR	41BR 65, 87, 228, 246, 250, 253 , 261, 276, 415, 420, 433 , 441, 473 , 474, 478 , 480, 492, 493
Weston, J. D., R. P. Mauldin, J. P. Dering, R. D. Greaves, and B. Saner	2003	Archaeological Testing of Four Sites on Camp Bowie, Brown County, Texas	CAR Archaeological Survey Report No. 335	CAR	41BR 392 , 471, 500, 522
Bonine, M. L. and J. W. Steely	2006	Transformation of the Cultural and Physical Landscape: Historical Archaeology and Oral History at Camp Bowie, Brown County, Texas	SWCA Cultural Resources Report No. 2006-343	SWCA	41BR 65 , 266, 270 , 290, 299, 438, 477

No other munitions bunkers were located. Site 41BR299 has retained sufficient integrity to be considered eligible for the NRHP under Criteria A and D, and possibly C (Bonine and Steely 2006).

Prehistoric Sites (41BR65, 87, 228, 246, 250, 253, 392, 420, 433, 473, 478, 492, 493, and 522)

The 14 eligible prehistoric sites on Camp Bowie consist of 16 burned rock midden features with varying degrees of integrity, ranging from excellent to adequate (Mauldin et al. 2003; Weston et al. 2003). All have sufficient integrity to be considered eligible for the NRHP under Criterion D. Because each of the 14 sites has the potential to contribute to a better understanding of Texas prehistory, they are all designated as State Archaeological Landmarks (SAL).

Of the 16 middens, 11 are circular in shape, 8 have some manifestation of a center depression, and 11 have some degree of a talus ring (Table 2-5). Fourteen middens likely formed during the Late Prehistoric and two in the Late Archaic with use into the Late Prehistoric. Diagnostic artifacts and charcoal dates away from the middens suggest occupations spanning from the Early Archaic into the Late Prehistoric (41BR228 and 41BR250), the Middle Archaic into the Late Prehistoric (41BR246), and the Late Archaic to the Late Prehistoric periods (41BR65, 41BR87, 41BR433,

41BR473, 41BR478, and 41BR492). One burned rock midden (41BR522) contained a well-defined slab-lined central feature and another (41BR253) held a human burial. The human remains were not excavated but were analyzed in situ (Francis 2003). Three middens (41BR228 and 41BR493) were disturbed to varying degrees by military activities. In addition to burned rock middens, mortar holes were present on sites 41BR228 (n=12) and 41BR433 (n=1; Mauldin et al. 2003; Weston et al. 2003).

Eagle Mountain Lake Training Site

Commissioned as the Eagle Mountain Marine Corps Air Station in 1942, the Eagle Mountain Lake Training Site was used as a glider training facility until 1943 and then as a Navy landing site for amphibious and land-based aircraft from 1943 to 1946. After World War II, the facility was used jointly for Naval Air Reserve training and as a Texas National Guard armory and training camp. In 1957 ownership of the property was transferred solely to the Texas Army National Guard (Davidson 2001). The training site currently contains 1,250 acres (506 hectares), roughly forty percent of its original 2,922 acres (1,182 hectares).

The Eagle Mountain Lake Training Site is located in the northwest corner of Tarrant County in north Texas. It lies in the Trinity River drainage basin in the Cross Timbers

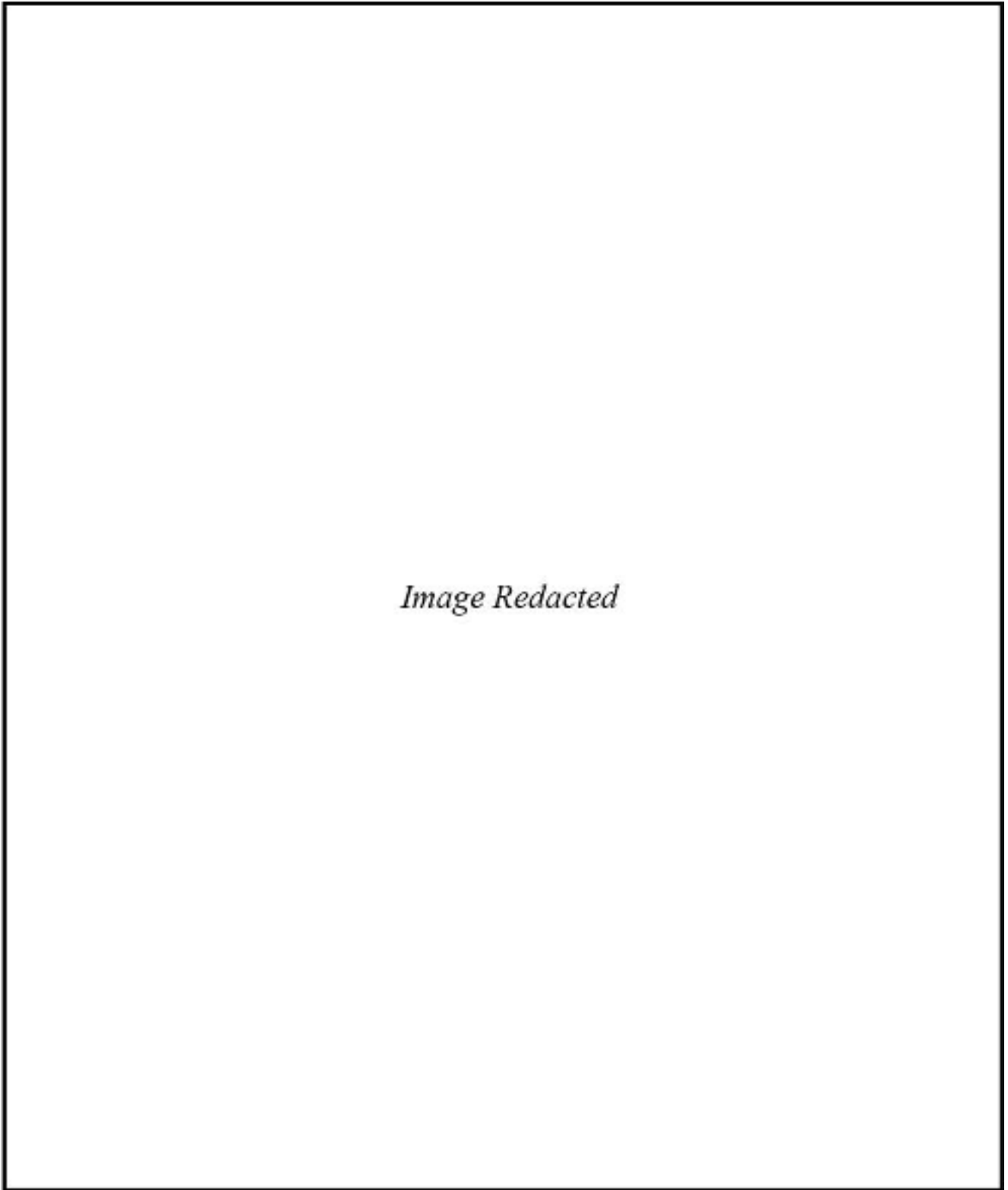


Figure 2-3. *Eligible and potentially eligible sites on Camp Bowie.*

Table 2-5. Burned Rock Middens on Eligible Sites at Camp Bowie

Site	Midden Shape	Center Depression	Ring	Size	Height above ground (m)	¹⁴ C Dates from Midden Deposits (corrected, calibrated at 2 Sigma)	Formation
41BR65	circular	slight	yes	14 m diameter	0.5-1	Level 3 - cal. 950-780 BP, Level 5 - cal. 1160-960 BP, Level 6 - cal. 1170-970 BP	Likely formed in about 195 years at the beginning of the Late Prehistoric
41BR87	circular	no	no	15 m diameter	0.3-0.7	Level 4 - cal. 910-690 BP, Level 7 - cal. 1170-970 BP	Likely formed in around 300 years at the beginning of the Late Prehistoric
41BR228	circular	yes	yes	15 m diameter	1	Level 3 - cal. 900-680 BP, Level 7 - cal. 1040-920 BP	Likely formed in about 175 years during the Late Prehistoric
41BR228	semi-circle	disturbed	disturbed	20 x 10 m	disturbed	Level 6 - cal. 1260-990 BP, Level 6 - cal. 3310-3000 BP	May have originally been used in the Late Archaic with additional use during the Late Prehistoric
41BR246	crescent	no	no	13 m diameter	0.1-0.5	Level 4 - cal. 670-550 BP, Level 14 - cal. 910-690 BP	May have formed in around 190 years sometime in the Late Prehistoric
41BR250	circular	yes	yes	10 x 15 m	0.4-0.75	Level 12 - cal. 760-660 BP	May have formed sometime between AD 1120 to 1280 in the Late Prehistoric
41BR253	rectangular	no	no	10 x 8 m	0.5	Level 3 - cal. 710-650 BP, Level 5 - cal. 730-650 BP	May have rapidly formed sometime between AD 1244 and 1292 in the Late Prehistoric
41BR253	circular	yes	yes	15 m diameter	2	Level 5 - cal. 900-680 BP, Level 8 - cal. 1140-950 BP	Formed relatively slowly during the Late Prehistoric
41BR392	oval	yes	yes	12 x 15 m	0.6	Level 5 - cal. 1160-930 BP, Level 8 - cal. 1180-980 BP, Level 10 - cal. 1180-950 BP	Began to form at around AD 770-900 at the beginning of the Late Prehistoric
41BR420	circular	slight	yes	10 x 9 m	0.7	Level 2 - cal. 960-690 BP, Level 7 - cal. 1500-1310 BP	Midden may have formed in around 565 years beginning at the close of the Late Archaic and lasting into the Late Prehistoric
41BR433	circular	yes	yes	10 m diameter	0.3-0.6	Level 6 - cal. 930-700 BP	Midden was in use sometime from AD 1030 to 1210
41BR473	circular	shallow	yes	15 x 13 m	1-1.5	Level 4 - cal. 970-800 BP, Level 10 - cal. 1180-970 BP	May have generated in about 190 years at the beginning of the Late Prehistoric
41BR478	circular	no	no	10 x 15 m	0.5	Level 5 - cal. 1170-970 BP, Level 9 (below base) - cal. 3050-2850 BP	Midden was in use sometime from AD 780 to 960 in the Late Prehistoric
41BR492	circular	yes	yes	13 m diameter	0.5-0.6	Level 2 - cal. 920-700 BP, Level 5 - cal. 780-660 BP, Level 8 - cal. 1270-1060 BP, Level 11 - cal. 2760-2360 BP	Likely formed in around 1,770 years with initial use in the Late Archaic and most formation during the Late Prehistoric
41BR493	crescent	possible	yes	14 m diameter	low	Level 5 - cal. 310-0 BP, Level 11 - cal. 920-700 BP, Level 18 - cal. 950-780 BP	The upper date reflects disturbance. The midden likely formed over roughly 100 years during the Late Prehistoric
41BR522	circular	yes	yes	14 x 15 m	0.5-1	Level 4 - cal. 780-670 BP, Level 5 - cal. 730-650 BP	In use sometime around AD 1250 during the Late Prehistoric

physiographic region. Davidson (2001) excavated a series of seven backhoe trenches to assess the geomorphology of the broad fluvial terraces on the southeastern portion of the facility. He concluded that the deposits contain modest soil development and are the result of thousands of years of fluvial sedimentation that ended in the Late Holocene.

Two Section 106 surveys have been conducted on the Eagle Mountain Lake Training Site in the last fifteen years, one by AGTX personnel (Skinner 1997) and one by TARL (Davidson 2001). Of the 13 recorded sites, one is eligible for the NRHP (Table 2-6).

41TR182

The Jefferson Cemetery (41TR182), a small family plot located near the southwest boundary of the facility, consists of a minimum of five graves. Five headstones with footstones were recorded as well as a partial limestone tablet that does not appear to belong to the headstones. The headstones are all inscribed with the names of Jefferson family members. The Jefferson family occupied the southern portions of the training facility by 1860. The prosperous family owned as many as nine slaves before Emancipation. After the death of James D. Jefferson in 1879, surviving family commenced selling their land holdings. Because the cemetery is intact and historically significant, Davidson (2001) recommended the site as eligible for inclusion in the NRHP.

Camp Swift

In an attempt to improve the Depression era economy, local leaders from Bastrop and Austin convinced the Army to select north Bastrop County as the location of new World War II military training facility. Camp Swift was developed on 55,982 acres (22,655 hectares) of land purchased from private owners in early 1942. By May 1942 training commenced at the facility (Sitton 2006). Camp Swift consisted of 2,750 buildings, including a German prisoner-of-war camp, and eventually contained a population of over 44,000 military

personnel. After the war, roughly half of the acreage was returned to private owners. The remaining property was turned over to the Lower Colorado River Authority, The University of Texas at Austin, and the Texas Army National Guard (Sitton 2006). Currently, Camp Swift consists of 11,500 acres (4,654 hectares).

Camp Swift lies in Bastrop County, approximately 30 km east of the Balcones Escarpment. It sits on rolling terrain dissected by both intermittent and flowing streams that eventually discharge into the Colorado River. Bastrop County falls within the Texan biotic province in the Post Oak Savannah vegetation region (TPWD 2013a, b). The geologic strata on Camp Swift consist of a sandy mantle overlying a pedogenically altered argillic Bt horizon. Because it is unclear whether the interface between the argillic horizon and the sand mantle is the result of pedogenesis or of sedimentation, the integrity of archaeological deposits in the mantle has been a subject of contention among archaeologists and geologists (see Bateman et al. 2007; Boulter et al. 2010; Bousman and Fields 1988; Frederick and Bateman 2001; Frederick et al. 2002; Leigh 1998; Thoms 2007).

At least 31 archaeological investigations have been conducted at Camp Swift over the past 17 years (Table 2-7). The work includes 23 surveys, two archival research studies, and six testing projects. Fourteen surveys were completed by AGTX personnel (Davis 1994a, b, 1995; Leshley 1994c, 1996; Robinson et al. 2001; Stringer and Wormser 1996; Sullo and Wormser 1996; Wormser 1993a, b, 1994a; Wormser, Haslouer Kay, et al. 1997; Wormser and Leshley 1995; Wormser and Sullo 1996), two by the Texas Archeological Survey (Dibble 1976; Skelton and Freeman 1979), three by Espey, Huston and Associates (Nash et al. 1996; Nash et al. 1995; Schmidt and Cruse 1995), one by the Lower Colorado River Authority (Nightengale and Moncure 1996), one by the CAR (Munoz and Mauldin 2012), and two by the CAS (Nickels et al. 2010; Nickels et al. 2005). Archival Research on Camp Swift's prewar property owners was undertaken by personnel from the CAS (Freeman et al. 2006; Sitton 2006). Of the six testing projects, four were completed by

Table 2-6. Archaeological Investigations at Eagle Mountain Lake Training Site (Eligible Sites are in **Red Type**)

Author	Date	Report	Report Type	Investigator	Sites
Skinner, S. A.	1997	Cultural Resources Survey near Eagle Mountain Lake, Texas	AGTX Archeological Survey Report Form	AGTX	none
Davidson, J. M.	2001	An Archaeological Survey and Archival Assessment of 1,250 Acres of the Texas Army National Guard Eagle Mountain Lake Training Site, Tarrant County, Texas	TARL Studies in Archeology 39	TARL	41TR182, 183, 186-196

Table 2-7. Archaeological Investigations at Camp Swift (Eligible Sites are in Red Type)

Author	Date	Report	Report Type	Investigator	Site
Dibble, D. S.	1976	Results of an Archaeological Survey of Areas to be Affected by a Proposed Sanitary Landfill, Camp Swift, Texas	Technical Bulletin No. 11	Tx Arch. Survey	none
Skelton, D. W. and M. D. Freeman	1979	A Cultural Resource Inventory and Assessment of Camp Swift, Texas	Report No. 72	Tx Arch. Survey	41BP90-137, 138 , 139-144, 145 , 146 , 147-169, 170 , 171-172, 183-184, 534
Wormser, A. J.	1993	Archeological Survey of Proposed Septic Tank Field East of Blackwell Drop Zone	AGTX Archeological Survey Report Form	AGTX	none
Wormser, A. J.	1993	Archeological Survey of Proposed Tank Ditches on the Northwest Side of Scott Hill at Camp Swift Bastrop County, Texas	AGTX Archeological Survey Report Form	AGTX	41BP98, 135
Davis, G. P.	1994	Archeological Survey for Range Road Extension at Camp Swift Bastrop County, Texas	AGTX Archeological Survey Report Form	AGTX	41BP379, 380
Davis, G. P.	1994	Archeological Survey for Development of a Mock Village for Military Operations on Urban Terrain Training at Camp Swift, Bastrop County, Texas	AGTX Archeological Survey Report Form	AGTX	none
Leshley, C. M.	1994	Archeological Survey for Ammunition Storage Facilities at Camp Swift Bastrop County, Texas	AGTX Archeological Survey Report Form	AGTX	41BP378-380
Wormser, A. J.	1994	Archeological Survey for Rechannelization of a Stream at the M60 Range Firing Line at Camp Swift, Bastrop County, Texas	AGTX Archeological Survey Report Form	AGTX	41BP381
Davis, G. P.	1995	Archeological Survey for the Bastrop County Firefighters' Association Training Area at Camp Swift, Bastrop County, Texas	AGTX Archeological Survey Report Form	AGTX	41BP396
Nash, M. A. et al.	1995	A Cultural Resources Survey of the McNeil-Bastrop 138-kV Transmission Line Rebuild Project Bastrop, and Travis Counties, Texas	EH&A Report No. 13948	EH&A	41BP384-385, 389-391, 392
Schmidt, J. S. et al.	1995	Cultural Resources Survey Camp Swift, Bastrop County, Texas	EH&A Report No. 16927	EH&A	41BP156, 430-436
Wormser, A. J. and C. M. Leshley	1995	Archaeological Survey for the Proposed 386th Engineer Battalion Annual Squad and Platoon Training at Camp Swift, Bastrop County, Texas	AGTX Archeological Survey Report Form	AGTX	41BP102, 113, 118, 126, 138 , 146 , 147, 152, 155-156, 183, 397-399
Leshley, C. M.	1996	Archeological Survey for the Proposed Army Aviation Support Facility at Camp Swift Military Reservation Bastrop County, Texas	AGTX Archeological Survey Report Form	AGTX	none

Table 2-7. Archaeological Investigations at Camp Swift (Eligible Sites are in **Red** Type), continued...

Author	Date	Report	Report Type	Investigator	Site
Nash, M. A. et al.	1996	Class III Cultural Resources Inventory and Biological Survey of 4 Wellpads and Access Road Routes Camp Swift, Bastrop County, Texas	EH&A Report No. 17293	EH&A	none
Nightengale, B. A. and H. B. Moncure	1996	Intensive Cultural Resource Investigations at the Proposed Camp Swift Regional Wastewater Facility and Pipeline, Bastrop County, Texas	LCRA Cultural Resource Report No. 3	LCRA	41BP366-368
Stringer, S. S. and A. J. Wormser	1996	Archeological Survey for Proposed Pond Improvements, Camp Swift Military Reservation, Bastrop County, Texas	AGTX Archeological Survey Report Form	AGTX	none
Sullo, D. M. and A. J. Wormser	1996	Archaeological Survey for Proposed Bradley Fighting Vehicle Training "Area A" at Camp Swift Military Reservation Bastrop County, Texas	AGTX Archeological Survey Report Form	AGTX	41BP108, 397-398, 470-473
Wormser, A. J. and D. M. Sullo	1996	Archaeological Survey for Proposed Driver Training "Area B" at Camp Swift Military Reservation Bastrop County, Texas	AGTX Archeological Survey Report Form	AGTX	41BP378-380, 474
Wormser, A. J. et al.	1997	Archaeological Investigation of Road and Firebreak Improvements at Camp Swift, Bastrop County, Texas	AGTX Archeological Survey Report Form	AGTX	41BP160-162, 381
Robinson, D. G. et al.	2001	An Archaeological Inventory of Camp Swift, Bastrop County, Texas	CAR Archaeological Survey Report No. 316	AGTX	41BP90-137, 138 , 139-144, 145 , 146 , 147-169, 170 , 171-172, 183-184, 378-381, 382 , 383-385, 41BP389-391, 392 , 397-400, 430-436, 470-474, 476-477, 479-484, 485 , 486-487, 488 , 489-494, 495 , 496-504, 505 , 506-520, 521 , 522-528, 529 , 530-534
Nickels, D. L. et al.	2003	Archaeological Evaluation of 39 Category V Sites at Camp Swift Bastrop County, Texas	CAS Archaeological Studies Report No. 3	CAS	41BP91, 104, 107-108, 112, 115-117, 125, 127-128, 165, 378, 384-385, 389, 392 , 397, 432, 474, 484, 485 , 486, 488 , 495 , 496-498, 505 , 506, 510, 512, 518, 520, 521 , 523, 527, 529 , 532
Nickels, D. L. and M. Lehman	2004	Archaeological Evaluation of Sandy Mantle Prehistoric and Historic Sites at Camp Swift, Bastrop County, Texas: 2003	CAS Archaeological Studies Report No. 5	CAS	41BP93-94, 100, 105, 111, 113, 118, 121, 123, 138 , 146 , 148, 430-431, 435-436, 471, 477, 491, 528
Nickels, D. L. et al.	2005	An Archaeological Survey of 307 Acres at Camp Swift, Bastrop County, Texas: 2003	CAS Archaeological Studies Report No. 6	CAS	41BP662-672
Freeman, M. D et al.	2006	An Oral History of Camp Swift: 2004 Interviews	CAS Archaeological Studies Report No. 9	CAS	none

Table 2-7. Archaeological Investigations at Camp Swift (Eligible Sites are in **Red** Type), continued....

Author	Date	Report	Report Type	Investigator	Site
Lohse, J. C. and C. B. Bousman	2006	National Register Evaluation of Eight Sites at Camp Swift Army National Guard Training Center, Bastrop County, Texas: Swift V	CAS Archaeological Studies Report No. 8	CAS	41BP105, 111, 113, 118, 121, 471, 491, 528
Sitton, T.	2006	Sandyland Farmers: Life in the Countryside before Camp Swift, 1920-1942	CAS Archaeological Studies Report No. 9	CAS	none
Nickels, D. L. et al.	2008	Archaeological Excavations on 20 Prehistoric Sites at Camp Swift, Bastrop County, Texas: 2002	CAS Archaeological Studies Report No. 12	CAS	41BP107-108, 112, 117, 125, 128, 389, 392, 485 , 486, 488, 495 , 496-497, 505 , 506, 512, 520, 521, 529
Nickels, D. L. et al.	2010	An Archaeological Survey of 3,475 Acres at Camp Swift, Bastrop County, Texas	CAS Archaeological Studies Report No. 11	CAS	41BP93-97, 99-101, 103, 105-106, 109, 111-112, 114, 119-124, 127-132, 136, 138 , 139, 142-143, 147, 153-154, 157-159, 161-162, 164, 167, 171-172, 184, 366-367, 381, 384, 433-436, 472, 484, 485 , 487, 489-492, 494, 495, 521 , 534, 695-804
Munoz, C. M.	2012	A Cultural Resource Inventory of 550 Previously Surveyed Acres on Camp Swift, Bastrop County, Texas	CAR Archaeological Survey Report No. 423	CAR	41BP125, 144, 155, 430, 432, 522-523, 859-868
Munoz, C. M.	2013	Archaeological Phase I Testing of 41BP854 at the Texas Military Force's Camp Swift Facility in Bastrop County, Texas	CAR Archaeological Survey Report No. 431	CAR	41BP 854
Mauldin, R. M. and C. M. Munoz	2013	National Register Eligibility Testing of Seven Prehistoric Sites on Camp Swift, Bastrop County, Texas	CAR Archaeological Survey Report No. 436	CAR	41BP 776 , 778, 780, 782, 792, 801, 802

the CAS (Lohse and Bousman 2006; Nickels and Bousman 2008; Nickels and Lehman 2004; Nickels et al. 2003) and two by the CAR (Mauldin and Munoz 2013; Munoz 2013). All together 306 archaeological sites have been recorded at Camp Swift, including 16 that have been recommended as eligible for the NRHP (Figure 2-4).

Historic Sites (41BP138, 145, 146, 170, 382, 854, and 913)

Seven historic sites, including three cemeteries, one isolated grave, two homesteads, and one dam, are considered eligible for the NRHP. The Chandler Cemetery (41BP145), located in the southwestern quadrant of Camp Swift, is about 760 m from the likely location of the Chandler homestead. Three graves consisting of S. B. Chandler and two of his young sons, Robert and William, are enclosed by a 3.7-x-3.7 m wrought iron fence (Robinson et al. 2001). The graves, dating

to 1883, 1857, and 1870, each have a marble headstone and footstone. Also in the southwestern quadrant, the "Mexican" Cemetery (41BP170) is reported to contain interments dating to the 1910s and 1920s of Mexican miners from the historical Sayers' lignite mine. The mine was located approximately 560 m north of the cemetery. As many as 13 burials have been reported, but no grave markers are present. A 1997 investigation with the goal of identifying graves and establishing cemetery boundaries was only able to locate three graves (Robinson et al. 2001). The New Hope Cemetery (41BP382), located in the northwestern quadrant of Camp Swift, is an African-American cemetery that originated in the late nineteenth century. Although an informant estimated that approximately 35-40 individuals were interred at New Hope (Rother 1991), Robinson et al. (2001) recorded 56 possible unmarked grave sites along with nine marked sites. The marked headstones are inscribed with dates of death ranging from 1882 to 1940 (Robinson et al. 2001).

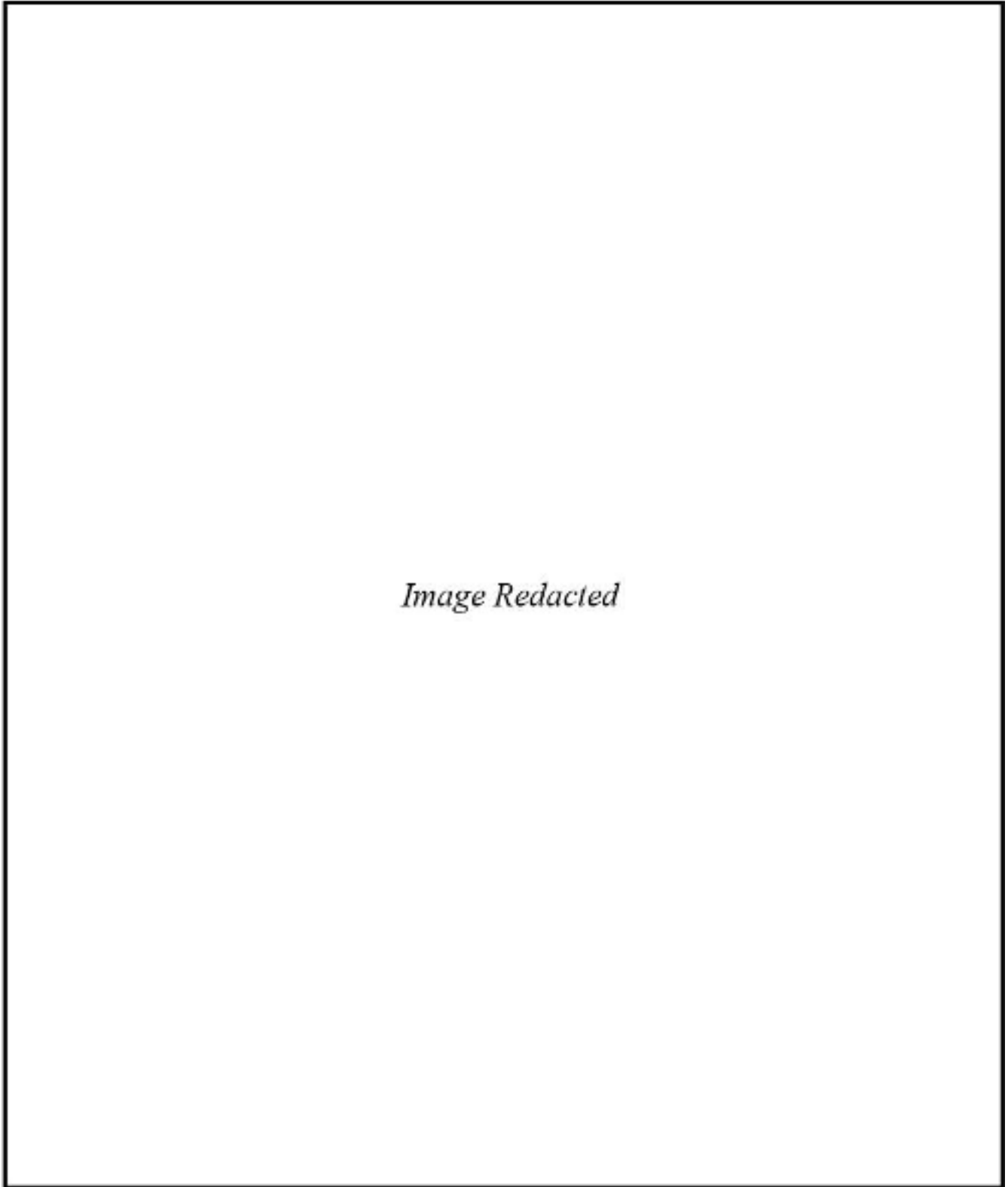


Figure 2-4. *Eligible and potentially eligible sites on Camp Swift.*

An isolated unmarked grave (41BP146) consisting of four walls and a cover made of sandstone slabs was recorded in a heavily wooded area in the center of the facility. Limited archival research and an in situ analysis of the sandstone slabs by Nickels and Lehman (2004) suggest that the burial dates to ca. 1878-1900 and may contain the remains of an infant or young child belonging to the Laake, Herms, or Gest family. They recommend in-depth archival research and scientific testing to determine the identity of the remains.

A homestead dated to the late 1800s was recorded on the southeastern quadrant of Camp Swift. The site (41BP854) contains scattered historic artifacts, remnants of a foundation, the remains of a probable kiln, and fragments of gravestones. Engravings on the gravestones and limited archival research suggest that the property belonged to the William Scarborough family (Munoz 2013). A second homestead site deemed eligible for the NRHP (41BP138) is the late nineteenth-century site of Antoine Aussiloux's home, winery, barn, cistern, and grape fields. Mauldin (2001) and Nickels and Lehman (2004) concur that the winery "provides a glimpse into the early-Texas wine industry from the mid-nineteenth to early-twentieth century" (Mauldin 2001:176). The site is recommended for eligibility to the NRHP under Criteria A, B, C, and D (Nickels and Lehman 2004). Associated with the Aussiloux homestead, site 41BP913 is a sandstone dam across Spring Branch Creek. Aussiloux constructed the dam creating Scott Falls around 1886. Built as a weir dam, it caused the water level to increase and overflow the dam into an irrigation channel. An opening on the western side of the dam allowed water to flow approximately 1,127 m down an earthen channel to Aussiloux's grape fields (Nickels and Lehman 2004).

Prehistoric Sites (41BP392, 485, 488, 495, 505, 521, 529, 776, and 802)

Camp Swift contains nine prehistoric sites that are recommended as eligible for the NRHP. Of the nine open campsite sites, eight contain burned rock hearth features and a variety of lithic artifacts (Table 2-8). Radiocarbon assays indicate occupations ranging from the Early Archaic to the Late Prehistoric. Due to intact features, diagnostic tools, and good organic preservation, the sites have the potential to yield significant information about the prehistory of the region specifically information regarding settlement and subsistence patterns (Mauldin and Munoz 2013; Nickels and Bousman 2008). Although no features were recorded at 41BP776, a high density of subsurface artifacts along with the recovery of burned rock suggest the possibility of buried

thermal features. The site appears to have sufficient integrity to be considered eligible for the NRHP under Criterion D (Mauldin and Munoz 2013).

Camp Maxey

The circumstances surrounding the establishment of Camp Maxey were similar to those of Camp Swift (see previous section). To boost the local economy, the leaders of Paris, Texas, petitioned political leaders and the Defense Department to construct a World War II military training camp in northeast Texas. In the early 1940s, the government acquired 70,000 acres (28,328 hectares) of land north of Paris and, in July 1942, activated Camp Maxey (Nickels et al. 1998). The facility was used for infantry training of approximately 200,000 men and as a German prisoner-of-war camp for nearly 7,500 detainees. The camp was deactivated at the close of the war in 1945. All but 16,500 acres (6,677 hectares) of Camp Maxey was offered for sale back to the original land owners. Of the 16,500 acres, 10,000 was used in the construction of Pat Mayse Lake and 6,500 acres (2,630 hectares) was deeded to the Texas Army National Guard for a military training center (Nickels et al. 1998).

Camp Maxey lies in Lamar County near the border of Texas and Oklahoma. Located on the Oak Woods and Prairies natural subregion of Texas, the facility is covered with hickory and post oak woodlands (TPWD 2013b). It sits within the Red River drainage basin between Sanders Creek to the north and Little Pine Creek to the south (Lyle et al. 2001). The location of Camp Maxey places it in a unique temporal chronology for Texas archaeology. The Late Archaic period in Texas generally dates from 4200 BP to 1200 BP, but in northeast Texas, the latter 1,300 years of the period is encompassed by the Woodland period. The Late Prehistoric period, ranging from 1200 BP to European contact in most of the state, is replaced by the Caddoan period. For a review of the Caddoan periods and phases in the middle Red River valley region of Texas see Perttula (Perttula 1998a, b).

Ten archaeological surveys and three testing projects have been completed at Camp Maxey since 1992 (Table 2-9). Five of the surveys were conducted by AGTX personnel (Ramsey 2005; Stringer 1997; Sullo and Stringer 1998; A. J. Wormser 1993c, d), one by Stephen F. Austin University archaeologists (Corbin 1992), two by personnel at the CAR (Lyle et al. 2001; Nickels et al. 1998), and two by Prewitt and Associates (Boyd et al. 2007; Finney and Boyd 2007). The testing projects were conducted by the CAR (Greaves 2003; Mahoney 2001; Mahoney et al. 2002). Of 139 sites recorded at Camp Maxey, 7 are recommended eligible for the NRHP (Figure 2-5).

Table 2-8. Eligible Prehistoric Sites at Camp Swift

Site	# Burned Rock Hearths	Diagnostics	Other Artifacts/Samples Collected	¹⁴ C Dates (Charcoal)	Time Period
41BP392	2	Untyped possibly Archaic point	1 biface, 2 unifaces, 4 cores, 455 flakes, 577 burned rocks, 37 charcoal samples	870 +/- 40 BP	Archaic, Late Prehistoric
41BP485	2	Late Archaic Ellis point, 3 untypable Late Archaic points, Pedernales point, untypable dart point	9 bifaces, 12 unifaces, 3 cores, 1 tested cobble, 3,226 flakes, 1 silicified wood tool, 1 hammerstone, 60 charcoal samples	2430 +/- 40 BP, 490 +/- 40 BP	Early Archaic, Late Archaic, Late Prehistoric
41BP488	4	Scallorn point, 2 untypable points, Late Archaic untyped point	3 bifaces, 2 unifaces, 1,245 flakes, sand tempered pottery sherd, 41 charcoal samples	920 +/-40 BP, 910 +/- 40 BP, 770 +/- 40 BP, 740 +/- 40 BP, 640 +/- 40 BP	Late Archaic, Late Prehistoric
41BP495	3	Darl point, Clear Fork gouge, Scallorn point, Clovis preform (appears curated)	2,617 flakes, 1,262 burned rocks, hammerstone, boiling stone, bifaces, unifaces, cores, 76 charcoal samples	1630 +/- 40 BP, 1620 +/- 40 BP, 930 +/- 40 BP, 910 +/- 40 BP, 640 +/-40 BP	Late Archaic, Late Prehistoric
41BP505	1	none	146 flakes, 424 burned rocks, 11 charcoal samples, 2 soil columns	1840 +/- 40 BP	Late Archaic
41BP521	2	Granbury point, Scallorn point, Ensor point, Castroville points	4 bifaces, 2 cores, 810 flakes, 322 burned rock, 1 ground/battered stone, 3 battered stones, 1 incised hematite, 63 charcoal samples, 1 OCR sample	1180 +/- 40 BP	Late Archaic, Late Prehistoric
41BP529	1	none	19 flakes, 48 burned rocks, 12 charcoal samples, 4 OSL samples, 4 OCR samples, 3 soil columns	5980 +/- 40 BP	Early Archaic
41BP776	0	Late Prehistoric point base	400+ flakes, 100 burned rocks and heat spalls, 5+ cores, 1 groundstone fragment, 4 bifaces, 3+ gravers, 2 utilized flakes	none	Late Prehistoric
41BP802	1	Untyped Archaic point	240 flakes, 226 burned rocks and heat spalls, 2 cores, 1 groundstone fragment, 1 biface, 3+ gravers, 2+ utilized/retouched flakes	1100 +/- 30 BP	Archaic, Late Prehistoric

Historic Sites (41LR167 and 318)

Two cemeteries are located on Camp Maxey, a small family plot (41LR167) and the Casey cemetery (41LR318). Site 41LR167 is a homestead with the remnants of a concrete foundation and three recorded graves (Nickels et al. 1998). The first interment consists of a headstone inscribed “Alven son of TA and LG Draper, Born Dec. 1, 1908, Died Jan 24, 1911” with “AD” on the footstone, the second contains a

headstone inscribed “Draper, William M., 1854-1931, Mary K. (Jones), 1852-1927,” and the third is an illegible head- or footstone. The 1998 survey report that recorded the site contained no archival information on the Draper family and only mentioned one grave. Site 41LR318 is a large cemetery consisting of at least 39 individuals interred from 1898-1941. Ramsey (2005) mapped and recorded the headstone/ footstone inscriptions, but no other archival work could be found. The site was not a part of the previous archaeological surveys or testing projects on Camp Maxey.

Table 2-9. Archaeological Investigations at Camp Maxey (Eligible Sites are in Red Type)

Author	Date	Report	Report Type	Investigator	Sites
Corbin, J.E.	1992	Archaeological Survey of Proposed Raw Water Line (EDA, B4) for the City of Paris, Lamar County, Texas	SFA Archaeological Report	SFA	41LR137-139
Wormser, A. J.	1993	Realignment of County Road Survey	AGTX Archeological Survey Report Form	AGTX	none
Wormser, A. J.	1993	Camp Maxey, Survey of Antitank Ditches, Lamar County	AGTX Archeological Survey Report Form	AGTX	none
Stringer, S.C.	1997	Adjutant General's Department Archaeological Survey Report, Camp Maxey Training Site	AGTX Archeological Survey Report Form	AGTX	41LR145-148
Nickels, D.L. , L.C. Nordt, T.K. Perttula, C.B. Bousman and K. Miller	1998	Archaeological Survey of South-west Block and Selected Roads and Firebreaks at Camp Maxey, Lamar County, Texas	CAR Archaeological Survey Report No. 290	CAR	41LR149-151, 152 , 153-163, 164 , 165-166, 167 , 168-169, 171-179
Sullo, D.M. and S.C. Stringer	1998	Cultural Resource Investigations for Minor Construction Projects, Camp Maxey, Lamar County, Texas	AGTX Archeological Survey Report Form	AGTX	none
Lyle, A.S., S.A. Tomka, and T.K. Perttula	2001	Camp Maxey II: A 5000 Acre Cultural Resources Survey of Camp Maxey, Lamar County, Texas	CAR Archaeological Survey Report No. 312	CAR	41LR137, 139, 148, 168, 170-171, 173, 181-185, 186 , 187 , 188-189, 190 , 191-234, 236-250, 252-280
Mahoney, R.B.	2001	Camp Maxey III: Archaeological Testing of 23 Prehistoric Sites, Lamar County, Texas	CAR Archaeological Survey Report No. 314	CAR	41LR 152 -153, 155-158, 160, 163, 164 , 168, 170, 186 , 187 , 202, 204, 207-208, 212, 260, 266, 268, 285-286
Mahoney, R.B., S.A. Tomka, J.D. Weston and R.P. Mauldin	2002	Camp Maxey IV: Archaeological Testing of Six Sites, Lamar County, Texas	CAR Archaeological Survey Report No. 326	CAR	41LR 190 , 194, 196, 200, 258-259
Greaves, R.D.	2003	Camp Maxey V: Archaeological Testing of Seven Sites on the Camp Maxey Training Facility, Lamar County, Texas	CAR Archaeological Survey Report No. 330	CAR	41LR137, 214, 222, 225, 233, 244, 254
Ramsey, D.	2005	Camp Maxey Casey Cemetery Grave Descriptions	AGTX Archeological Survey Report Form	AGTX	41LR 318
Boyd, D.K., J.K. McWilliams and A.E. Dase	2007	Archeological Investigations and Assessments for Five Historic Farmstead Sites on Camp Maxey, Lamar County, Texas	PAI Technical Report No. 77	PAI	41LR138, 145-148
Finney, C. and D.K. Boyd	2007	Inventory and National Register Assessment of World War II Resources at the Camp Maxey Cantonment (41LR139), Lamar County, Texas	PAI Technical Report No. 153	PAI	41LR139

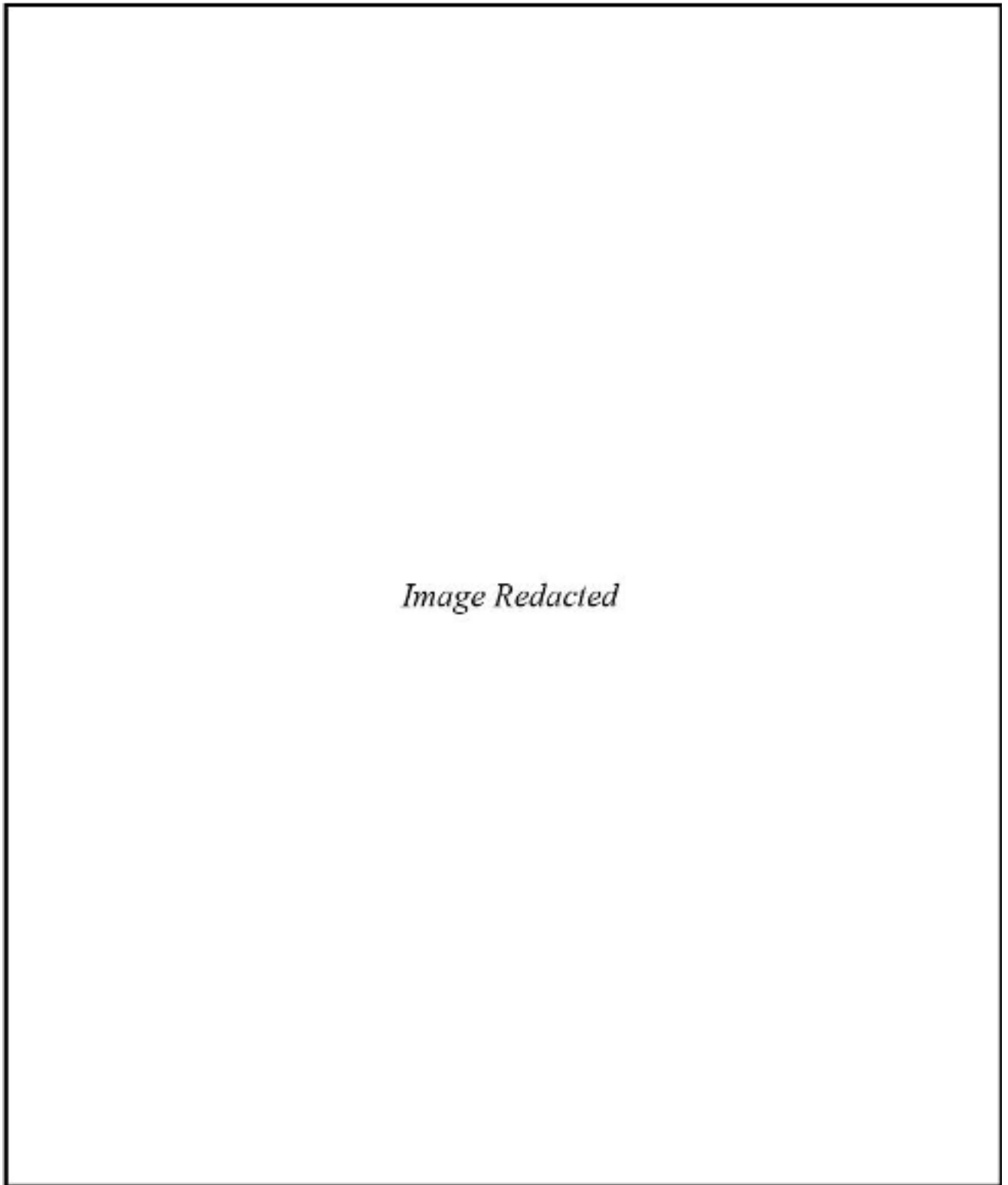


Figure 2-5. *Eligible and potentially eligible sites on Camp Maxey.*

Prehistoric Sites (41LR152, 164, 186, 187, and 190)

Five prehistoric open campsites are deemed eligible for the NRHP at Camp Maxey. They range in age from the Late Archaic period to the Late Caddoan period of the Late Prehistoric. Diagnostic artifacts and radiocarbon assays from 41LR152 suggest dates of occupation from the Pre-Caddoan Woodland period to the Formative Caddoan period. A vertically oriented wooden post with a discernible posthole was uncovered 30-40 cm below the surface. Radiometric dating of this feature returned a calibrated age at 2 sigma of 1304-1073 BP, placing the post at the beginning of the Formative Caddoan period. An intact native ceramic vessel was recovered 70 cm below the surface. A calibrated radiocarbon date of 2741-2358 BP (2 sigma) suggests that the vessel is affiliated with the Woodland period (Mahoney 2001). Artifacts recovered include native ceramic sherds, tools, debitage, burned clay, burned rock, and ochre.

Thermal features were recorded at three of the eligible sites, 41LR164, 186, and 190. A burned sandstone feature was uncovered 30-40 cm below the surface at 41LR164. The sandstone, dated to an average of 2100 BP (2 sigma), falls within the pre-Caddoan Woodland period. Recovered artifacts include a native ceramic sherd, Archaic period dart points, tools, cores, debitage, burned rock, and a hammerstone (Mahoney 2001). An additional burned rock feature was uncovered 60-70 cm below the surface at 41LR186. No charcoal, bone, organic staining, or other evidence of food-processing was apparent. Two diagnostic artifacts, a Gary point preform and a proximal point with a parallel stem and rounded base, were recovered from the site and suggest either a single component Woodland period occupation or a multiple component Archaic and Late Prehistoric site. Additional artifacts recovered include native ceramic sherds, tools, cores, debitage, burned rock, petrified wood, and a hammerstone (Lyle et al. 2001; Mahoney 2001). Three thermal features were recorded on 41LR190. Altogether, 1,494 artifacts were recovered from the site including 3 Kent and 3 Gary Late

Archaic/Transitional Archaic projectile points, lithic tools, cores, debitage, burned rock, a hammerstone, and ochre. Cultural materials extend to approximately 120 cm below the surface with peaks suggesting two to three occupation surfaces (Mahoney et al. 2002).

The final eligible prehistoric site on Camp Maxey, 41LR187, produced a substantial artifact assemblage with the largest, most diverse native ceramic recovery on the facility. Recovered sherds include examples of red-slip, engraved, punctuated, parallel brushed, incised, and appliquéed decorations (Lyle et al. 2001; Mahoney 2001). The ceramics suggest a Middle Caddoan occupation of the site. Lithic tools include a Gary dart point preform, an untypable dart point, an untypable arrow point, bifaces, scrapers, cores, debitage, and burned rock. The lithic tools suggest a single component Woodland period occupation or a multiple component Archaic and Late Prehistoric site (Mahoney 2001).

Summary

This chapter briefly reviewed the six Texas National Guard facilities containing archaeological sites recommended as eligible for the NRHP. Established in 1892 (Camp Mabry), 1925 (Fort Wolters), 1940 (Camp Bowie), and 1942 (Eagle Mountain Lake Training Site, Camp Swift, and Camp Maxey), the military bases have historically functioned as training facilities for the Spanish American War, World Wars I and II, the Cold War, and the Vietnam War. Currently, the bases train military personnel in response to foreign instability and insurgencies, e.g., ongoing conflicts in the Middle East and Korea. Covering approximately 32,565 acres (13,179 hectares), the six facilities have had a minimum of 73 archaeological investigations to record prehistoric and historic cultural resources on the properties. These projects have resulted in 45 sites deemed eligible for the NRHP (see Table 2-1). Subsequent chapters in this report will discuss the photopoint monitoring system set up on the facilities to document the condition of the eligible archaeological sites.

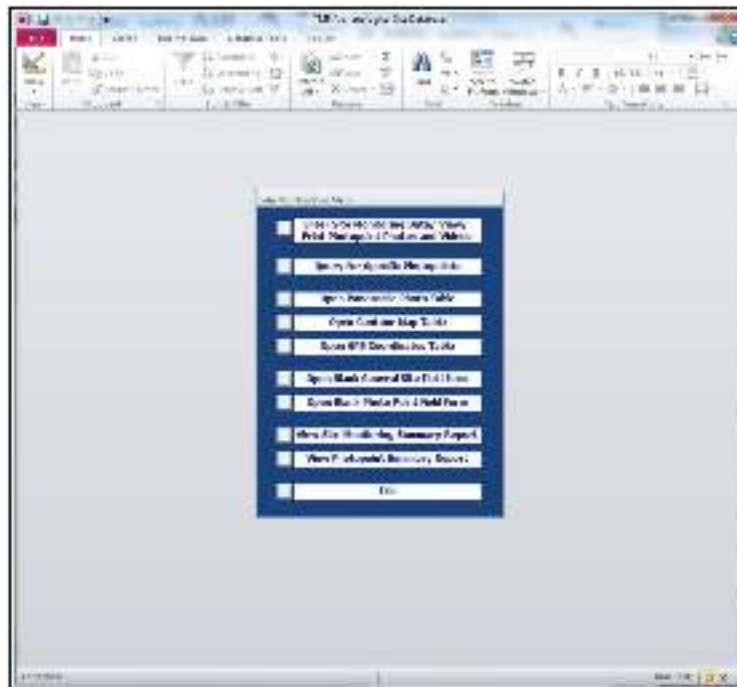


Figure 3-2. Site monitoring menu.

The CAR used the predetermined UTM locations loaded onto GPS units and printouts of aerial maps to locate the eligible sites on each facility. When a site was located, the CAR field crew thoroughly traversed the area corresponding to the UTM coordinates with the goal of locating the site datum, recorded features, artifact scatters, and, when visible, shovel tests, test units, and backhoe trenches from previous work. Using these landmarks and site maps produced from previous investigations, the site boundary was flagged.

Photopoint Set Up

Photopoints were established on each site in locations allowing observation of cultural features, erosional features, and other targets of importance to the TXMF. Depending on the number and arrangement of cultural features, the landscape elevation, and the location of vegetation, multiple photopoints were often necessary to document a site. Once a photopoint location was selected, a piece of rebar was hammered into the ground and labeled with a metal tag embossed with the photopoint number. Photopoints were labeled with the facility abbreviation and a sequential number (e.g., BOW01, MAX11, MAB05, WOL12, EML09, and SWT01). A bright orange plastic cap was placed on the top of each piece of rebar for visibility. Because the rebar serves two purposes, a location from which to take photos and an indicator of erosion, they were securely embedded into the

ground surface. When the points were established, the CAR crew measured and recorded the distance from the ground surface to the top of each rebar (with the cap removed) and used the GPS unit to record each location. Changes in erosion will be evident over time from differences in the ground surface to rebar top measurements. Information from each photopoint was recorded on a photopoint form (Figure 3-3).

Photo/Video Documentation

A minimum of four standard photos, in the cardinal directions, were taken from each photopoint. Additional photos were taken in other directions to note changes that would not be picked up in these four photos, e.g., animal burrows. The photos in the cardinal directions will be used to compare changes to the site over time. The camera was mounted onto a Manfrotto™ photostick and placed on top of the rebar. The orange rebar cap was removed first. A tripod can be used in place of the photostick but makes leveling the camera more difficult. The photographer measured and recorded the distance from the top of the rebar to the top of the photostick or tripod. With the aid of a compass, one photo was shot in each of the cardinal directions (Figure 3-4). Compass bearings and photos were recorded on the photopoint form in the order taken (see Figure 3-3) to enable a correct match up of photos to records when the photos were downloaded from the camera.

Archaeological Site Monitoring Form-Photopoint Data			
Facility Name:		Date:	
Site Number:		Visit Number:	Time:
Weather:			
GPS File Number:	GPS Northing:	GPS Easting:	
Photo point #:	Point height from ground to rebar top (cm):		
Camera:		Photographer:	
Position photostick on top of rebar. If using a tripod center it over the rebar. Measure the height from the top of the rebar to the top of the photostick or tripod. Using a camera with a standard lens take one photo in each of the cardinal directions. Record the photos in the order taken. Take any additional photos needed and record the compass bearing and reason. Take 3 photos with the pano lens. Start facing north with camera in position 1 subsequently moving to position 2 than 3. When working outdoors, set the Canon Rebel XT equipped with a pano lens on aperture priority mode (Av), ISO 100 (up pointing arrow) and center-weighted metering mode (use the left pointing arrow to select the empty rectangle). For indoor shots use ISO 400. Depress the shutter halfway, then all the way. Use a camcorder to record a video. Pan from the north clockwise back to north. Record tripod height from top of rebar. Voice over the beginning of the recording stating the site, photopoint number, and date. Turn the camera off after completion of each photopoint pan (do not simply pause).			
Photo Number (standard lens)	Bearing	Tri-Pod Height from top of rebar to top of tri-pod (cm)	Description
Photo Number (pano lens)		Tri-Pod Height from top of rebar to top of tri-pod (cm)	Description
	Position 1		
	Position 2		
	Position 3		
Video (start at North and pan clockwise)			

Figure 3-3. Photopoint field form.

In addition to photographs, digital video was taken from one or more photopoints to further record each site. The video camera was mounted and leveled on a tripod, and the distance from the top of the rebar to the top of the tripod was recorded. Starting with the camera facing north it was slowly panned in a clockwise direction for 360°. The name of the site and the photopoint number was stated at the start of each video to help match the videos up to the correct photopoints after the completion of fieldwork. To simplify processing the videos into individual clips (discussed in subsequent section), the camera was turned off upon completion of each photopoint’s video.

Finally, a navigable 360° image was created using a Canon Rebel XT camera equipped with a panoramic lens. The CAR personnel took a series of three photos from each photopoint or from one photopoint representative of the site. For outdoor shots (photopoints will likely be outdoors) the camera was set on aperture priority mode (Av) with the ISO at 100 and the metering mode to center-weighted average metering. ISO 400 is recommended for indoor shots. The camera was first attached to a rotator attachment then mounted and leveled on a tripod. The rotator attachment allows rotation of the camera to three preset positions within 360° enabling the photos to be stitched together (discussed in subsequent section). The



Figure 3-4. CAR crew taking photos in the cardinal directions from a photopoint.

distance from the top of the rebar to the top of the tripod was recorded. To ensure focused results, the shutter button was pressed halfway and then fully to take each picture. For each panoramic photo the first picture was taken facing north. Holding the tripod still, the camera was rotated to the remaining two preset positions resulting in three panoramic shots from the photopoint. The photos were recorded on the photopoint form (see Figure 3-3).

Upon completion of photo documentation of each site, the CAR personnel recorded all pertinent information about the site's condition on the archaeological site monitoring form (Figure 3-5). One site monitoring form and multiple photopoint forms were completed at the initial setup visit at each site.

Contour Map Construction

The last stage of setting up the photopoint system is the creation of a contour map. The maps were constructed with a Sokkia Set 6E total station in conjunction with a Carlson Explorer SurvCE data collector (Figure 3-6). These maps

will be used as base maps on monitoring revisits and include control points, features, drainages, photopoints, and, when located, previously established site datums.

Processing the Monitoring Data

Upon completion of the field work, all photographs, videos, GPS points, and TDS data were downloaded for incorporation into the Access monitoring database.

Standard Photographs

The photographs were downloaded into a new subfolder in the 'eligible site monitoring photos' folder. The subfolder was labeled with the facility name, visit number, and date of visit. Each photograph was labeled with the site, visit number, photopoint number, and photo number (e.g., BR65 V1 PPBOW8-1). To reduce the impact on database size while preserving the usefulness of the photograph, the memory size of each image was reduced from 1M or greater to 500k or less. The amount of reduction necessary for each photograph may vary depending on the camera used and its settings.

Archaeological Site Monitoring Form						
Facility Name:			Date:			
Site Number:			Visit Number:			
Recorder:			Time Spent on Site:	Number of People:		
Features Relocated?	yes no	Feature Comments:				
Cultural Materials Observed?	yes no	Comments:				
List cultural materials collected. Sketch collection location(s) on contour map.						
Using the contour map as a baseline, select the percentage of disturbance by category. Sketch the location of the disturbance on the map. Explain percentage choices, other than 0, below in the overall site condition section.						
	0	1-20 %	21-40%	41-60%	61-80%	>81%
Erosion						
Military						
Looting/Vandalism						
Other						
New Photopoint No.	Why were New Photopoints Installed?					
Overall Condition of Site:						

Figure 3-5. General site field form.

Although this was accomplished with Microsoft® Office 2010, any photo editor should work. The photographs were resized in Microsoft® Office 2010 by navigating to ‘Edit Pictures’ and selecting ‘Resize’ (Figure 3-7). The width and height were changed to 720 and 540, respectively. All images were adjusted and saved.

Panoramic Photographs

The panoramic photographs were downloaded into a subfolder in the appropriate facility subfolder in the ‘eligible

site panos’ folder. The subfolder was labeled ‘pano photos’ with the date (e.g., pano photos 7-21-09). Each photograph was labeled with the site, visit number, photopoint number, and photo number (e.g., BR65 V1 PPBOW8-1).

The panoramic photos were processed into panoramic images with Panoweaver 5.0 software. To process the photos with the software, ‘File’ then ‘Open Image’ was selected. The three photos for each photopoint were selected and inserted into one of the three frames at the bottom of the screen (Figure 3-8). After selecting ‘Open’, a screen appeared with each of



Figure 3-6. CAR crew constructing a contour map.

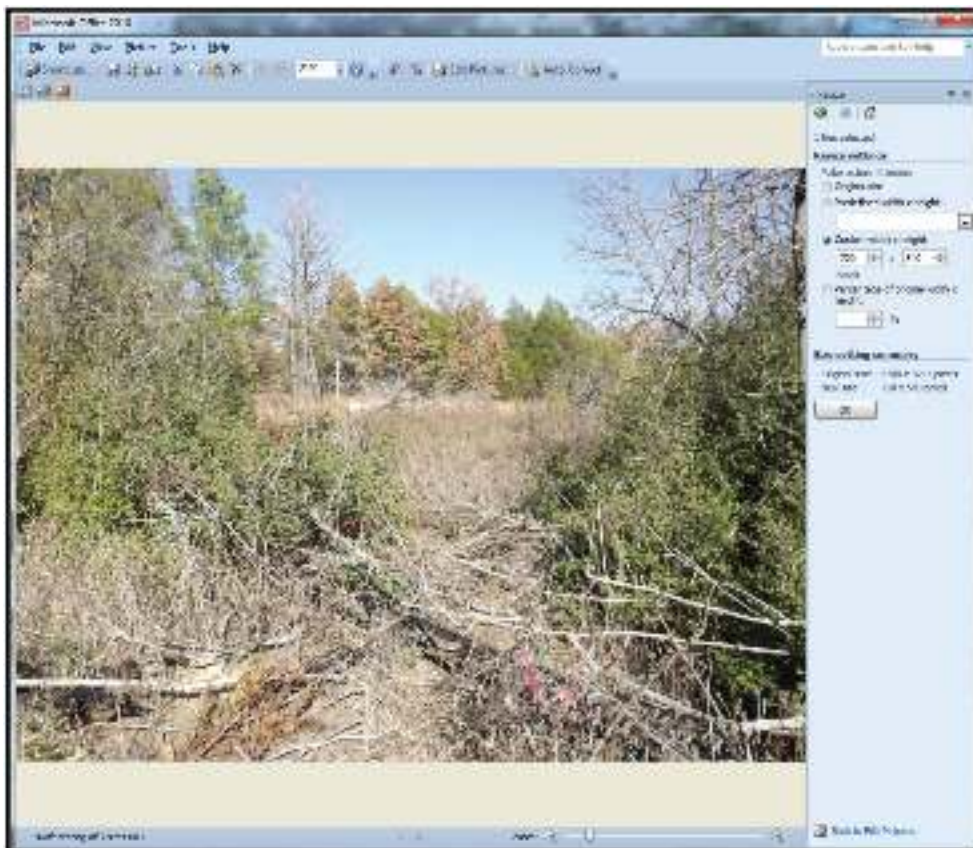


Figure 3-7. An example of Microsoft® Office 2010 Photo Editor with the resize dialogue box open.

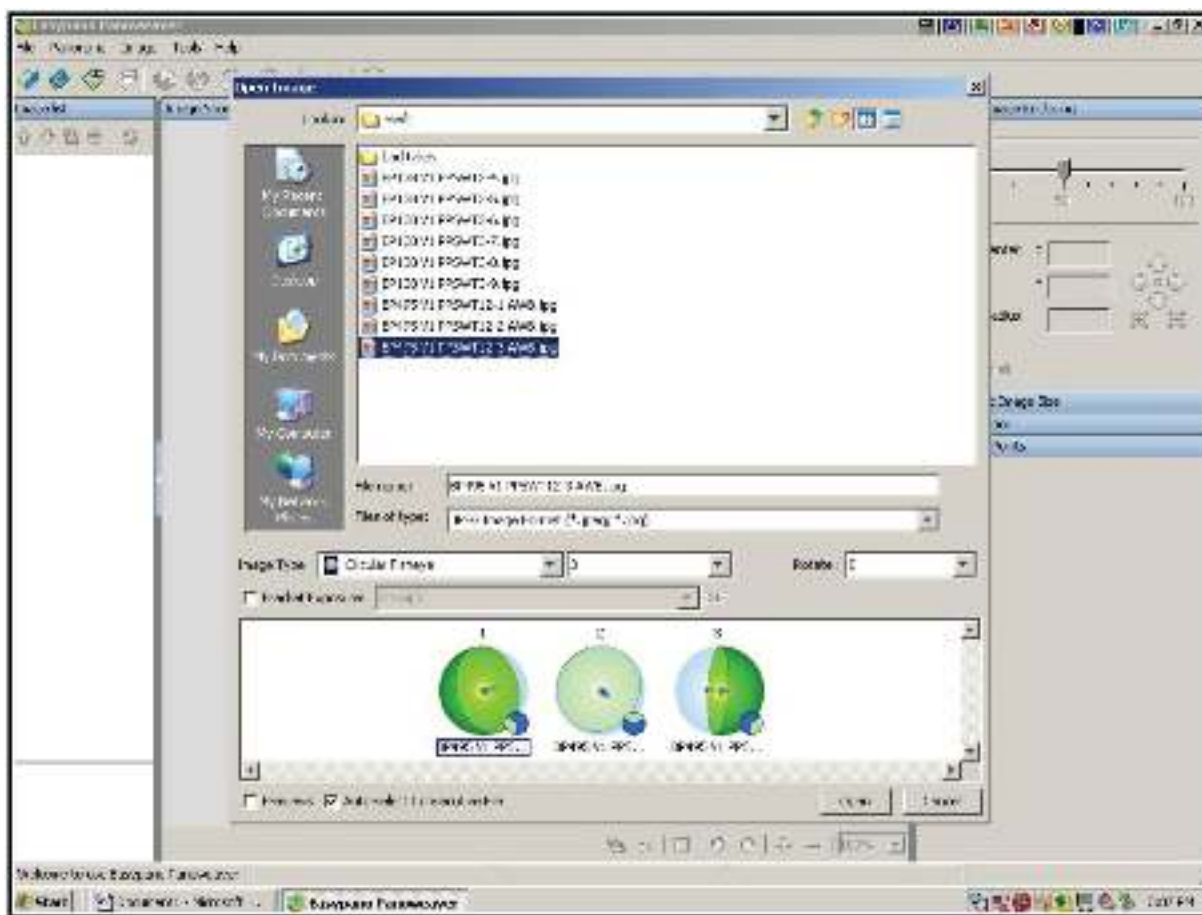


Figure 3-8. Opening the three images for a panoramic image at a photopoint.

the panoramic photos displayed on its left. When necessary, the photos were placed in the correct order by highlighting a photo and selecting the up or down arrow. ‘Panorama’ was selected from the menu toolbar followed by ‘Stitch’ (Figure 3-9). The three images were stitched together based on matching points. For some of the photos that were not taken exactly at the preselected points on the rotator attachment, a message was displayed stating that not enough matching points were found (Figure 3-10). When this occurred a minimum of three matching points between each pair of photos were hand selected to stitch the panorama (Figure 3-11). Once a sufficient number of matches were found, the panoramic image was displayed on the screen (Figure 3-12). Some of the panoramic images contained color variations, i.e., brightness, contrast, or hue differences, due to the effect of the sun’s position on each of the three photos. To correct this problem the original photos were opened in a photo editor program for color adjustments. When the color variations were reduced the photos were restitched in Panoweaver.

To obtain the final product, the panoramic images were published. In Panoweaver, ‘File’ was selected, ‘Publish’ was selected, the file was named, a storage pathway was

chosen, followed by a final selection of ‘Publish’ (Figure 3-13). This resulted in a .qvr file containing a .mov file with the panoramic image. If the image did not appear correctly stitched, e.g., items such as fence lines and tree limbs were askew, the stitching process was repeated by selecting more matching points manually, then republishing. Panorama (.mov file) of acceptable quality were labeled with the site number, visit number, and photopoint number (i.e., BR228 V1 PPBOW51). The files were saved in the appropriate facility subfolder in the ‘eligible site panos’ folder. Each panoramic image on the Panoweaver program (see Figure 3-12) was saved as a jpg in the ‘pano photos’ subfolder with the site, visit number, photopoint number, and pano (e.g., BR65 V1 PPBOW8 pano).

Video

The following instructions for video processing are for a Canon NTSC 2R85 Digital Video Camcorder and software owned by the CAR. Video clips can be created from a variety of cameras and software packages. The camcorder, powered with the power adapter, was connected with a firewire to one of the computer’s main USB ports. The camcorder power switch



Figure 3-9. *Stitching the three panoramic photos together using Panoweaver 5.0.*

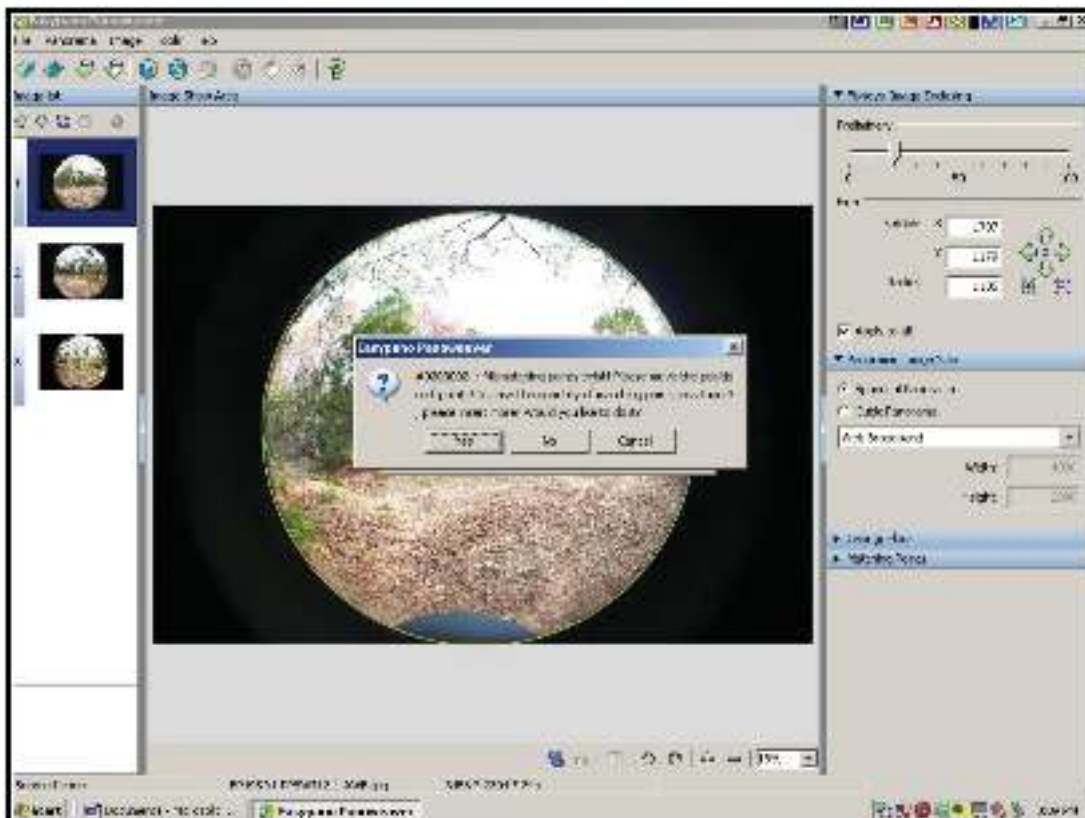


Figure 3-10. *Warning message stating that mismatching points exist.*

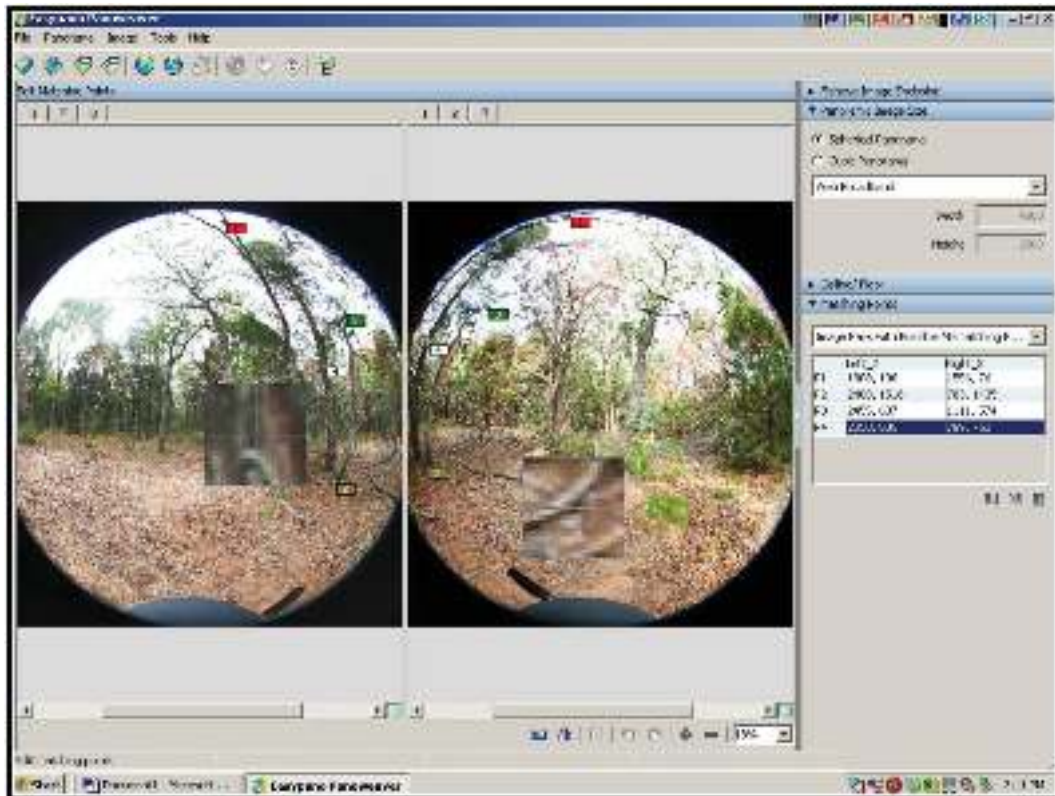


Figure 3-11. Manual selection of matching points.



Figure 3-12. Panoramic image resulting from stitching three panoramic photos.

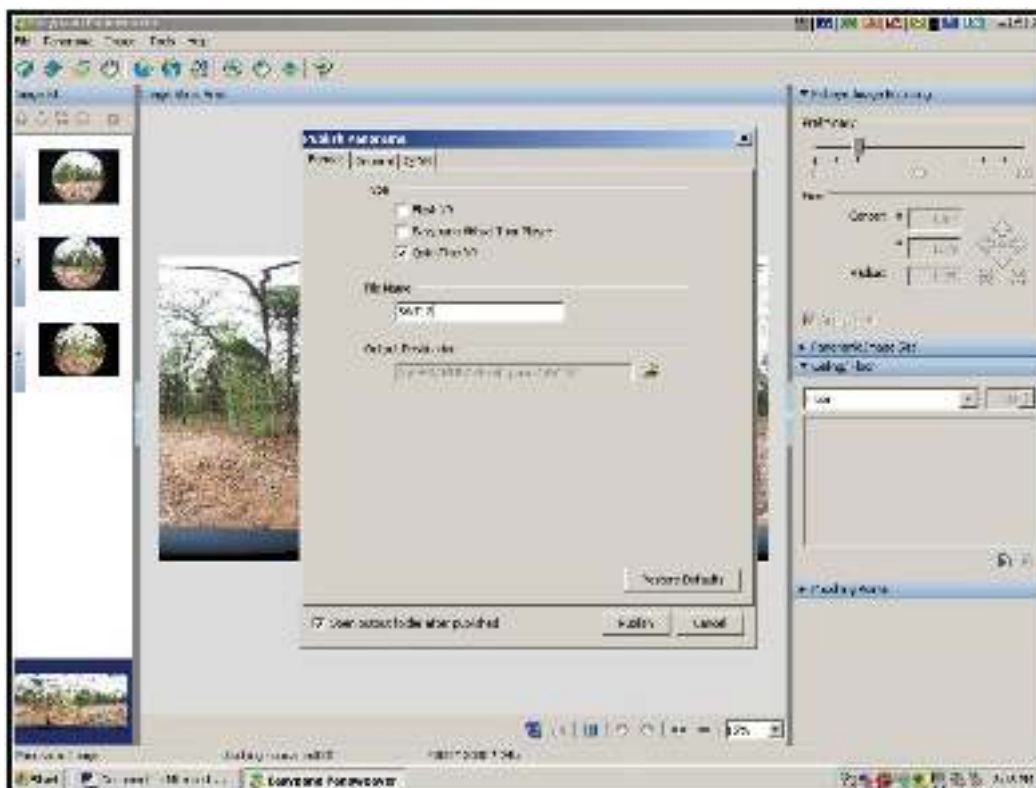


Figure 3-13. Publishing the panoramic image.

was set to play (VCR). On the popup window 'Record Video using Windows Movie Maker' was highlighted and 'OK' was selected. A file name and a temporary folder were entered to save and store the captured video. A sequence consisting of 'Next', 'Best Quality for Playback on my Computer', 'Next', 'Capture the Entire Tape Automatically' and 'Next' was selected. 'Create Clips when Wizard Finishes' was not checked. If checked the video breaks at odd places. Upon completion of video capture, a single movie was created. The movie was split into photopoint clips by playing the movie and using the 'Split' icon. When satisfactory, the clips were renamed with the photopoint number and dragged onto the storyboard. The clips were saved by selecting 'Save to my Computer'. They were named with the site, visit number, and photopoint number (e.g., BR65 V1 PPBOW8) and saved in the facility subfolder in the 'eligible site video clips' folder.

Contour Maps

Data downloaded from the Carlson Explorer SurvCE data collector were imported into Surfer software to create a contour map for each eligible site.

Site Information

Upon opening the Microsoft® Access monitoring database the main switchboard displays a 'Site Monitoring Data'

option (see Figure 3-1). Selection of this option results in the display of a site monitor menu (see Figure 3-2). The first choice on the menu opens a site monitoring data form (Figure 3-14). The forms, ordered first by facility, second by site number, and third by visit number, are easily navigated through with record indicator arrows at the bottom of the form. New site visits are entered by selecting the yellow asterisk on the record indicator. The site monitoring data form includes a hyperlink to the site's contour map. A box on this form, 'Open Photopoint Form', opens a form for data entry of each photopoint associated with the site and visit number (Figure 3-15). The yellow asterisk on the record indicator at the bottom of the form opens data entry forms for each subsequent photopoint for the specific site number. The photopoint forms each have a table with a column for hyperlinks to the files containing the photos, videos, and panoramic images.

The data from each site's general site field form and photopoint forms were entered into the database. Hyperlinks to the contour maps, processed photographs, videos, and .mov files were created. Hyperlinks were inserted into the database forms' hyperlink fields by right clicking on the appropriate data cell, clicking 'Hyperlink', and clicking 'Edit Hyperlink'. The 'Insert Hyperlink' window was used to browse for applicable document addresses. The document address was highlighted, the portion of the address prior to

'TXANG_Curation_Database_GIS' was deleted on the address bar, and 'OK' was selected. This portion of the address is deleted because it is already a part of the hyperlink base. The document address was inserted into the document link cell on the user form.

The database uses DBPix software. DBPix allows JPEG images to be inserted at actual memory size rather than large Database Interchange Bitmaps (DIBs). The photopoint data form contains four DBPix controls, one for each of the cardinal directions, for displaying images. JPEG photo images were imported into the database by right clicking a DBPix control and selecting 'Load' (Figure 3-16). The desired photo was browsed to and 'Open' was selected (Figure 3-17). The selected photo was inserted into the viewing form (Figures 3-18). This process was repeated for each photo.

Subsequent Site Visits

Once initial site visits establishing photopoints were completed, subsequent visits were relatively simple. Prior

to the fieldwork the CAR personnel printed blank copies of the general site field form, the photopoint field forms, and the contour maps. Site monitoring data forms and related photopoint data forms from the subsequent visit were also printed. Because photopoints were already established, the GPS unit was not used to record the point but to find any points that have become obscured by vegetation. The photos from the last visit, on the photopoint data forms, were also useful for finding obscured photopoints. As in the initial visit, photos were taken from each photopoint in the cardinal directions and recorded with bearings on the field forms. The photostick and camera were set up using the measurements from the previous visit to ease photo comparisons. Taking new video pan and panoramic photos from the photopoints is optional. The distance from the top of the rebar to the top of the photostick/tripod and the distance from the ground surface to the top of the rebar were recorded at each photopoint. The visit data and processed photos were entered into a new site visit form and photopoint form by clicking the asterisk on the record indicator at the bottom of the forms. Any new photopoints added to a site with established points were recorded with the GPS and handled as explained in the previous section on initial visits.

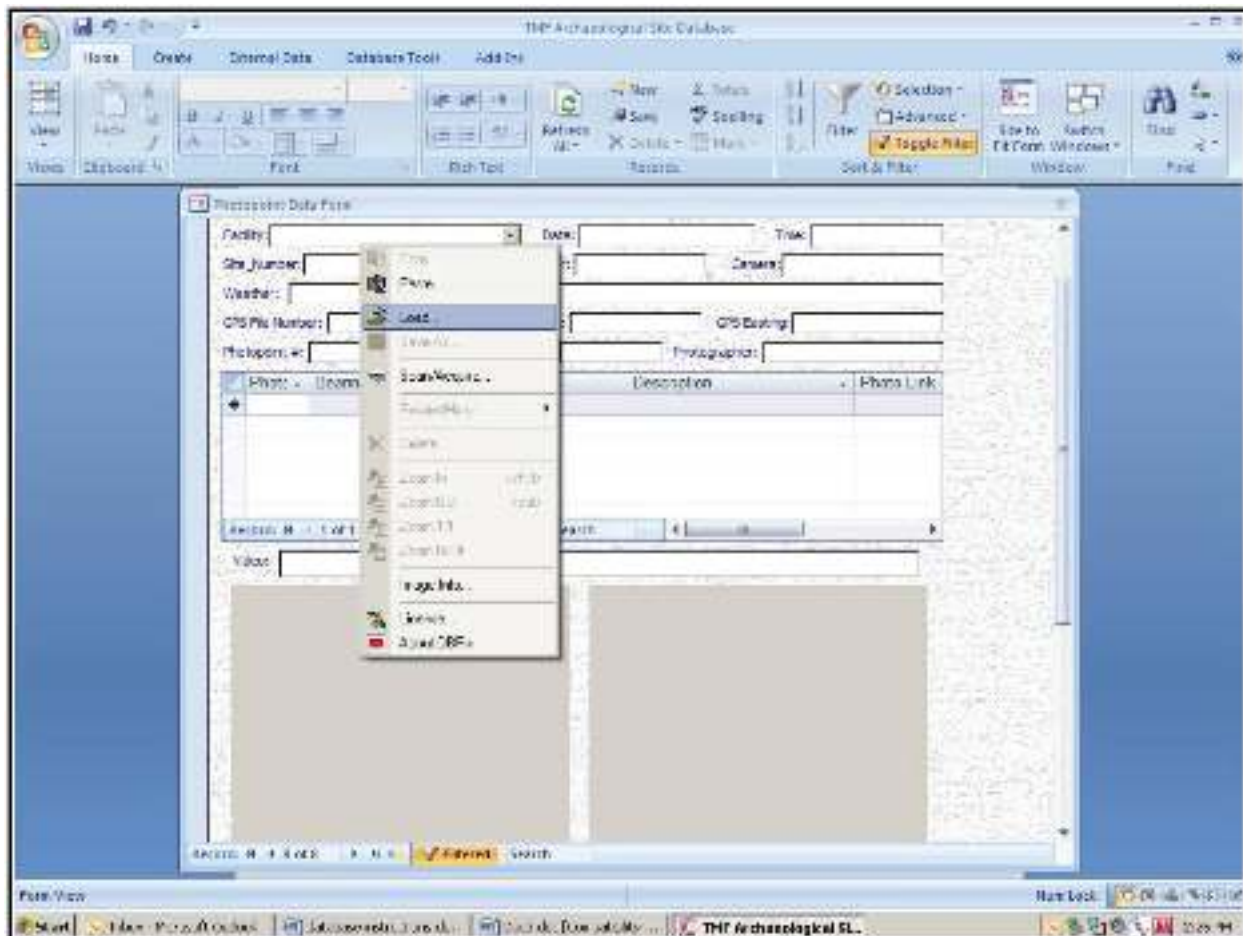


Figure 3-16. Loading an image into a DBPix control.

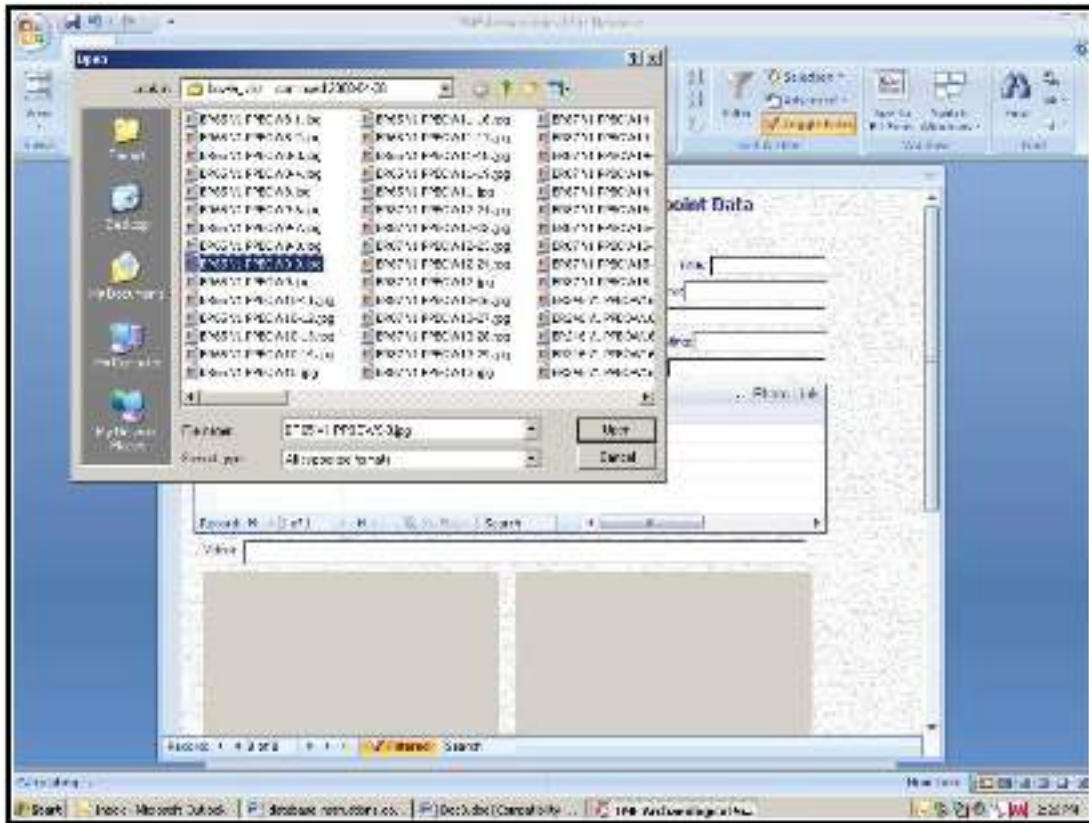


Figure 3-17. Locating the image for the DBPix control.

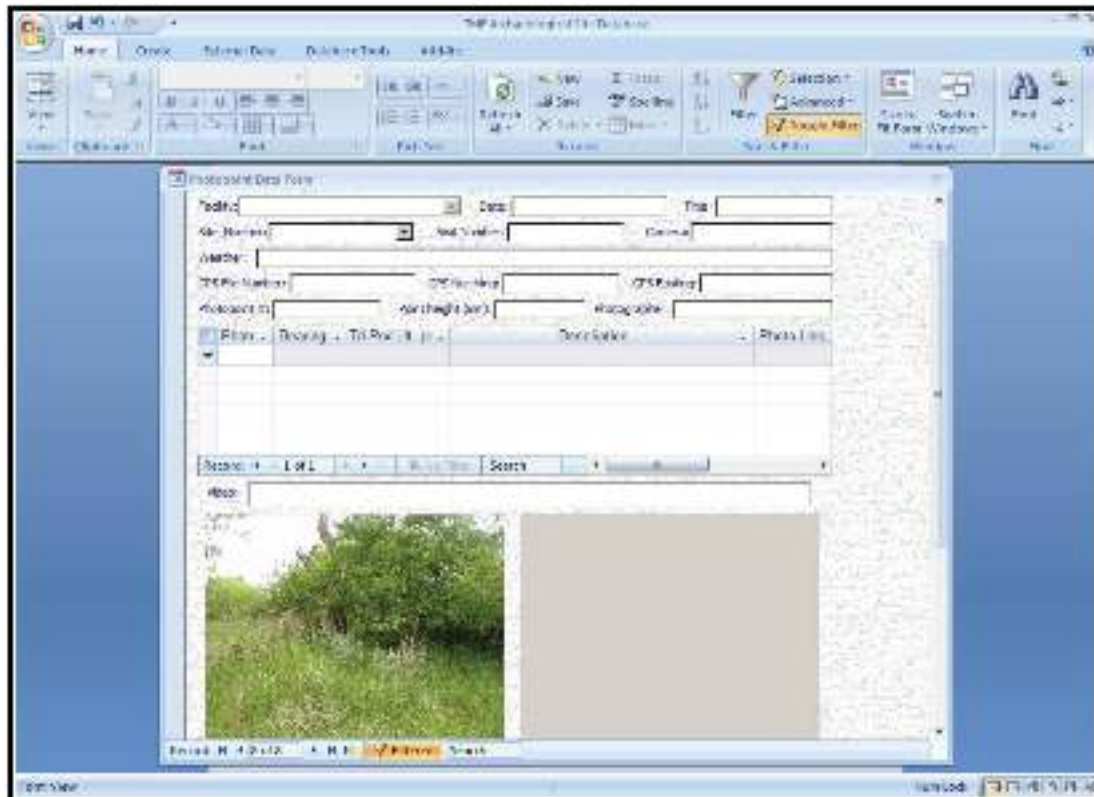


Figure 3-18. The result of loading an image into a DBPix control.

Database Options

The site monitoring menu presents seven options for viewing the photopoint data, including the site monitoring data forms and photopoint forms (Figures 3-19 and 20), queries for specific photopoints, tables listing all panoramic photos, contour maps, and GPS coordinates, and reports presenting a summary of monitoring and a summary of photopoints (see Figure 3-2). There are two report options on the site monitoring menu. One is to view a site monitoring summary report. This report presents a brief summary by facility, then site number, then visit date of the overall site condition and percentage of disturbance (Figure 3-21). The second option,

a photopoint summary report, presents the photos ordered by facility, then site number, then photopoint number, and lastly by date. The report allows the viewer to compare photos by bearing and date (Figure 3-22). A photopoint query option is available on the site monitor menu. Selecting this option opens a query dialogue box (Figure 3-23). This dialogue contains options for selecting a specific facility, site number, or photopoint number. Selecting parameters for a query results in a table listing all the photopoints that fit the parameters (Figure 3-24). The table contains hyperlinks to each photo. Finally, PDFs of monitoring results, photos, and contour maps are included in the TXMF GIS layers as attachments to eligible sites.

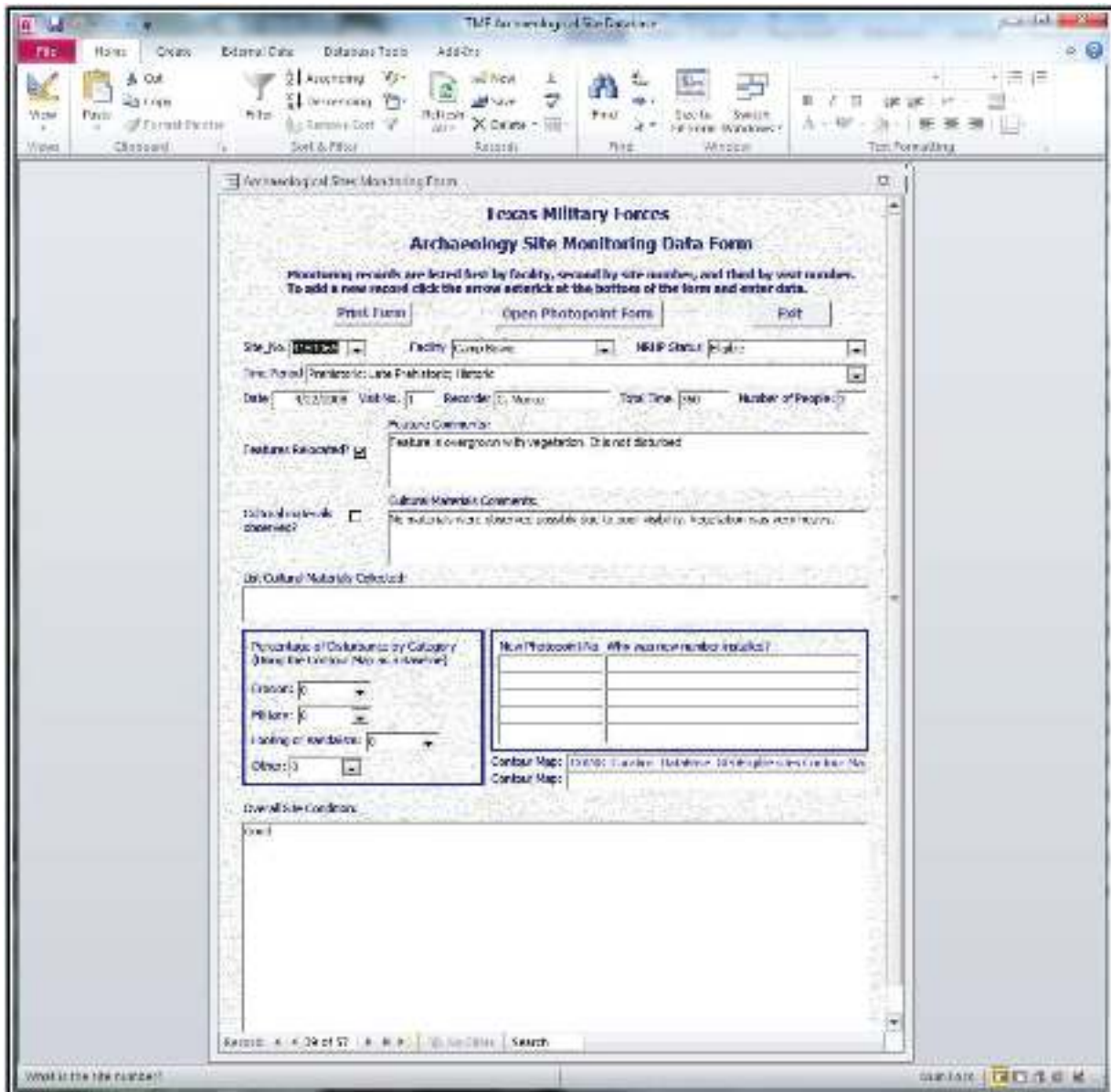


Figure 3-19. Site monitoring data form as an option for viewing monitoring data.

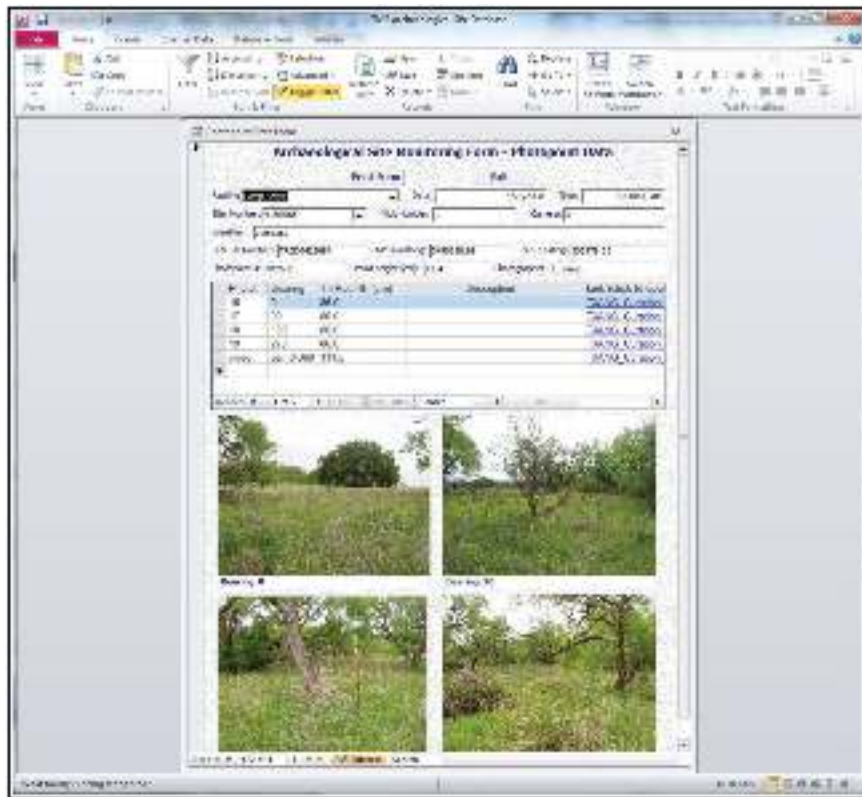


Figure 3-20. Photopoint data form as an option for viewing monitoring data.

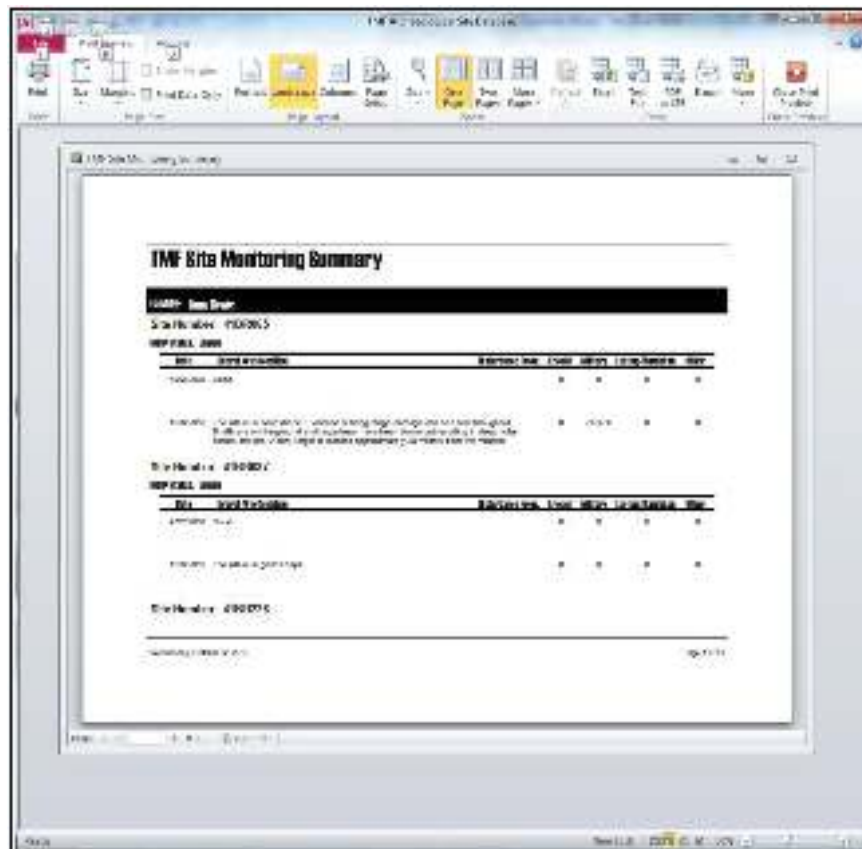


Figure 3-21. Site Monitoring Summary Report.

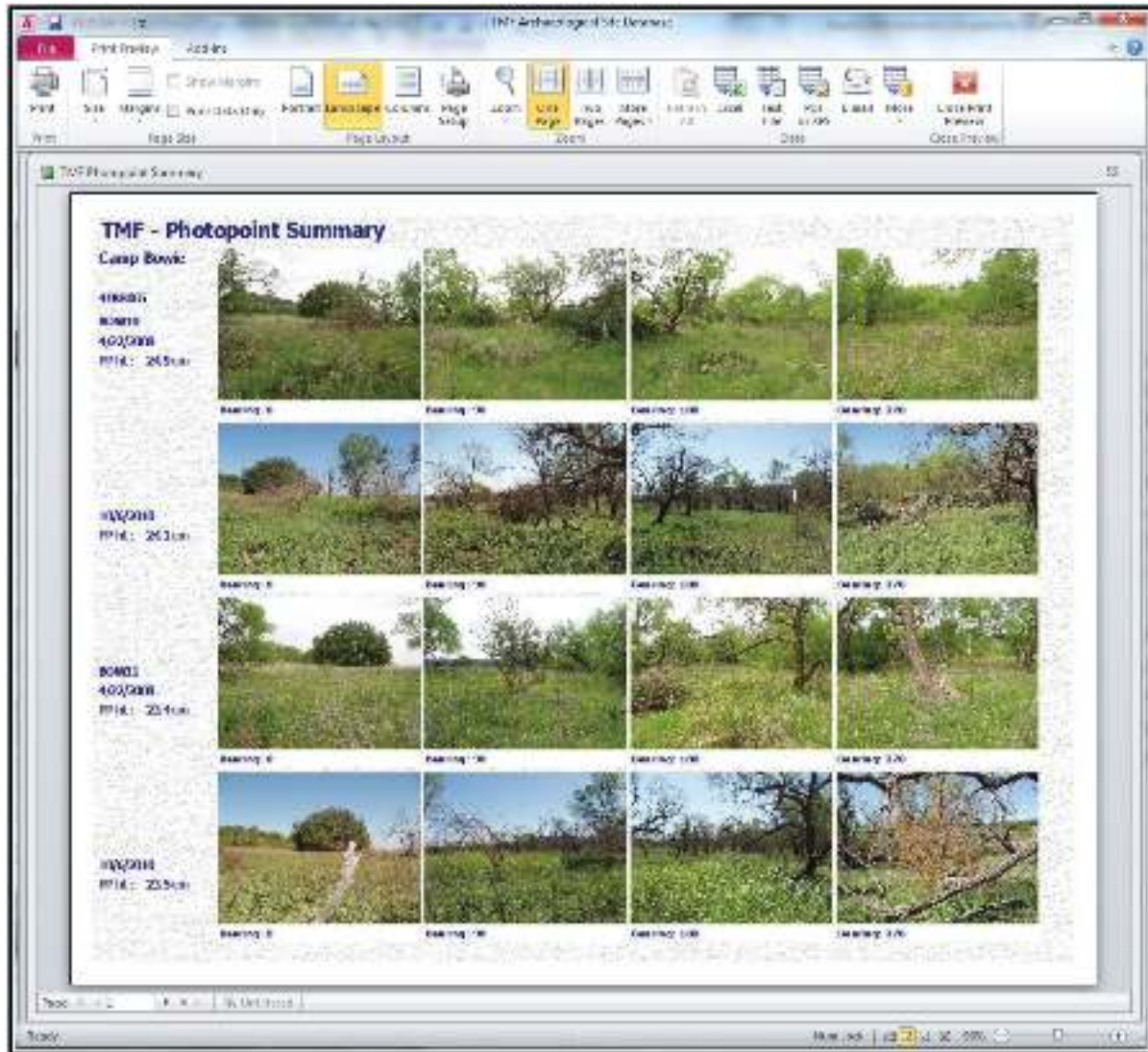


Figure 3-22. Photopoint Summary Report.

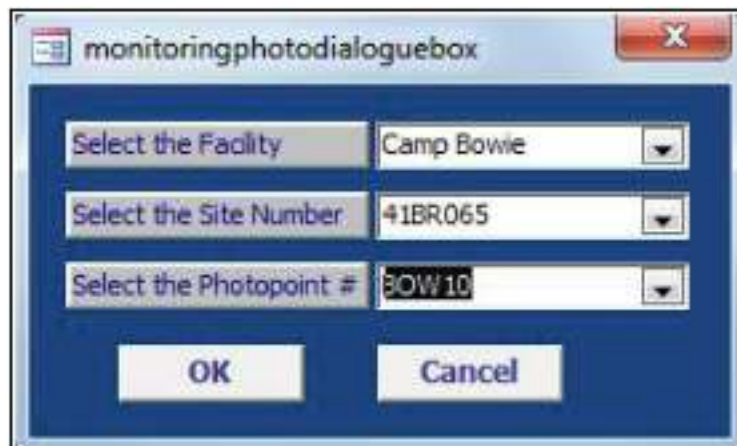


Figure 3-23. The Query Dialogue Box.

The screenshot shows a Microsoft Access window titled 'TXMF Archaeological Site Database'. The main area displays a table with the following data:

Facility	Site Number	Photopoint #	Spacing	Date	Details
Camp Bowie	4189065	807W14	0	4/22/2008	TXMNS_Curation_Database_051\archive\site monitoring\photos\bowie\site 1\campbowie_2008-08
Camp Bowie	4189065	807W13	0	10/9/2008	TXMNS_Curation_Database_051\archive\site monitoring\photos\bowie\site 1\photopoints_20-
Camp Bowie	4189065	807W12	180	4/22/2008	TXMNS_Curation_Database_051\archive\2008\20080422\campbowie\site 1\2012\20-
Camp Bowie	4189065	807W14	180	10/9/2008	TXMNS_Curation_Database_051\archive\site monitoring\photos\bowie\site 1\photopoints_20-
Camp Bowie	4189065	807W11	170	4/22/2008	TXMNS_Curation_Database_051\archive\2008\20080422\campbowie\site 1\2012\20-
Camp Bowie	4189065	807W12	270	10/9/2008	TXMNS_Curation_Database_051\archive\site monitoring\photos\bowie\site 1\photopoints_20-
Camp Bowie	4189065	807W13	90	4/22/2008	TXMNS_Curation_Database_051\archive\site monitoring\photos\bowie\site 1\campbowie_2008-08
Camp Bowie	4189065	807W12	90	10/9/2008	TXMNS_Curation_Database_051\archive\site monitoring\photos\bowie\site 1\photopoints_20-

Figure 3-24. Query results from the Query Dialogue Box.

Chapter 4: Photopoint Monitoring System Results

The photopoint system was set up on 37 of the 45 archaeological sites recommended as eligible for listing on the NRHP. This chapter presents an example of the site monitoring process and discusses changes evident from photo documentation.

Photopoint System Setup and Results at 41BR250 on Camp Bowie

Prehistoric site 41BR250 consists of one burned rock midden and a dense lithic scatter. The site, recorded by Wormser et al. (2001) and tested by Mauldin et al. (2003) was determined to have sufficient integrity to be considered eligible for the NRHP under Criterion D. The midden is ring-shaped with a center depression and measures 10 by 15 m. It formed during the Late Prehistoric period sometime between AD 1120-1280 (Mauldin et al. 2003). Because a drainage runs about 5 m due north of the midden, erosion is a concern.

Initial Visit

In April 2008, three photopoints were set up to monitor the midden and erosional feature on 41BR250. The site was located using aerial maps and UTM coordinates uploaded into Trimble Geo XT GPS units. A crew of three walked the site to determine what areas would benefit the most from periodic photo monitoring. The midden and site datums were relocated. The site boundary was determined by comparing the drainage, datums, and midden to the site map produced during testing of the site (Mauldin et al. 2003:72). Burned rock was lightly scattered across the site. A drainage was noted adjacent to the north side of the midden. Because the site's eligibility is based on the research potential from the essentially intact burned rock midden, the photopoint system was established on the northern portion of the site in the vicinity of the feature.

Three photopoints (BOW24, BOW25, and BOW26) were installed to monitor the midden and erosion along the drainage. For each photopoint, the GPS location and the distance from the ground surface to the top of the rebar was recorded on a photopoint field form.

Four standard photos, in the cardinal directions, were taken from each photopoint (Figures 4-1 and 4-2). Additional photos were taken from BOW26 at 250° to document an intrusion into the midden (Figure 4-3). The photo numbers, bearings, and the distance from the top of the rebar to the top of the photostick were recorded on the photopoint field form for each set of photos. A digital video was taken from photopoint BOW25. The video was started facing north and was slowly panned in a clockwise direction for 360°. The distance from the top of the rebar to the top of the tripod was recorded on the photopoint field form. Because the site was set up early in the development of the monitoring system, a panoramic image was not created. Upon completion of photo documentation of 41BR250, the CAR crew recorded all pertinent information about the site's condition on the archaeological site monitoring field form.

A contour map of the portion of the site pertinent to the site's eligibility status, i.e., the burned rock midden, was constructed using a Sokkia Set 6E total station in conjunction with a Carlson Explorer SurvCE data collector. Data points on the midden, photopoints, control points, site datum, and the ground in the midden's vicinity were systematically collected (Figure 4-4). The initial setup of the monitoring system on 41BR250 took three people approximately four hours.



Figure 4-1. View from photopoint BOW26 of the burned rock midden on 41BR250 (note BOW26 is located on top of the midden).



Figure 4-2. View from photopoint BOW25 of the drainage adjacent to the burned rock midden on 41BR250.



Figure 4-3. View from photopoint BOW26 of an intrusion, possibly from looting, on the burned rock midden on 41BR250.

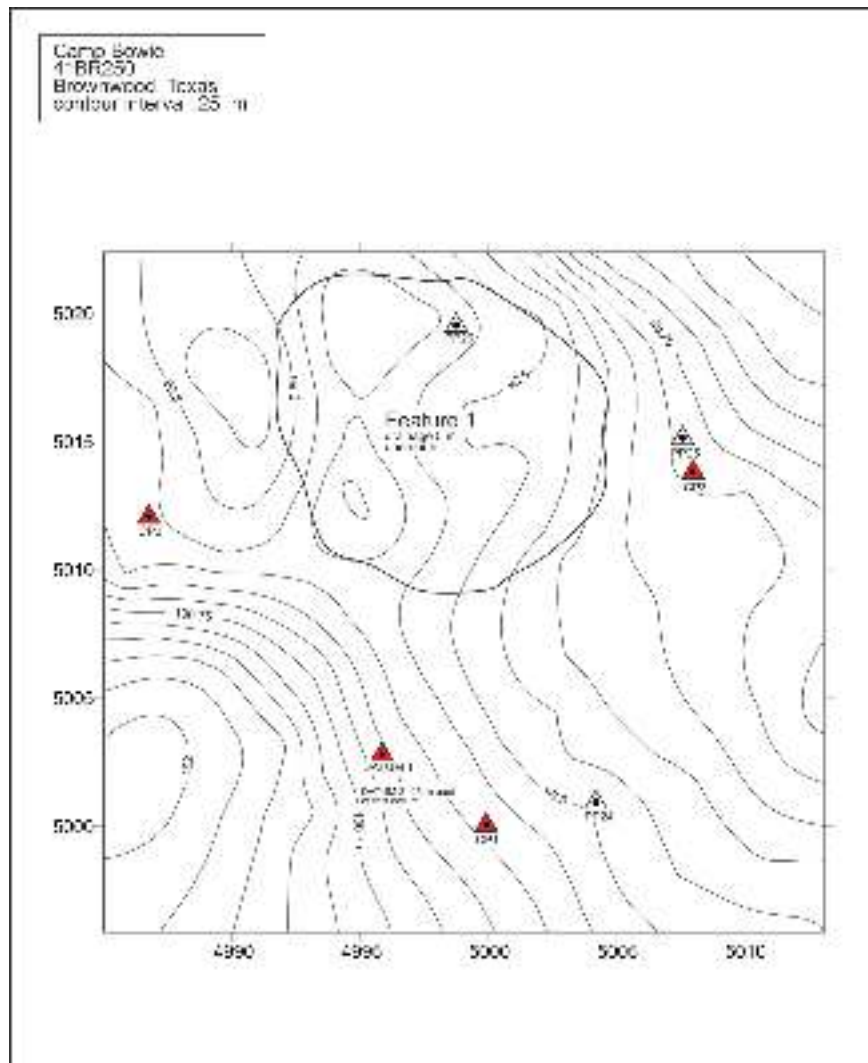


Figure 4-4. Contour map of 41BR250.

Upon the completion of field work, the data from the site's general site field form and photopoint forms were entered into the Access monitoring database along with the photo documentation and the contour map. Figure 4-5 displays the Archaeology Site Monitoring Data Form and Figures 4-6, 4-7, and 4-8 show the Photopoint Data Forms.

Second Visit

Two CAR archaeologists revisited 41BR250 in October 2010. The site was walked over and conditions were noted. Photopoints BOW24, BOW25, and BOW26 were relocated using the contour map (see Figure 4-4), GPS coordinates, and photopoint data forms from the previous visit. Occasionally, because a photopoint's rebar may be covered with vegetation, it is difficult to see. Standing at the GPS location and facing the cardinal directions using the previous pictures works well. Standard pictures were taken in the cardinal directions from

each point. Paperwork was filled out for each photopoint and for the general site condition. A series of photos was taken with a panoramic lens from photopoint BOW25 for the creation of a panoramic photo. The photos and the distance from the top of the rebar to the top of the tripod were recorded on the photopoint. The second visit took two people 45 minutes to complete.

Upon return to the CAR lab, the data from the second site visit were entered into the Access monitoring database along with the photo documentation and the panoramic .mov file (Figures 4-9 and 4-10). Figures 4-11, 4-12, 4-13, and 4-14 show the Archaeology Site Monitoring Data Form and the Photopoint Data Forms. A comparison of the first visit to the second on the Photopoint Summary Form calls attention to changes in vegetation and slight changes from erosion around the photopoint's rebar (Figures 4-15 and 4-16).

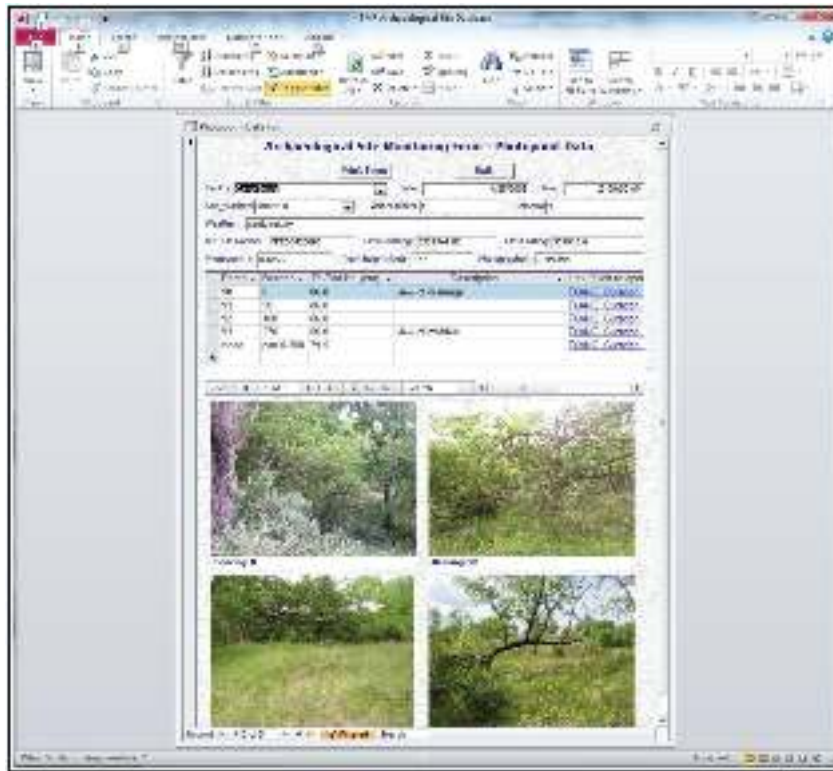


Figure 4-7. Photopoint data form for initial visit to photopoint BOW25 on 41BR250.

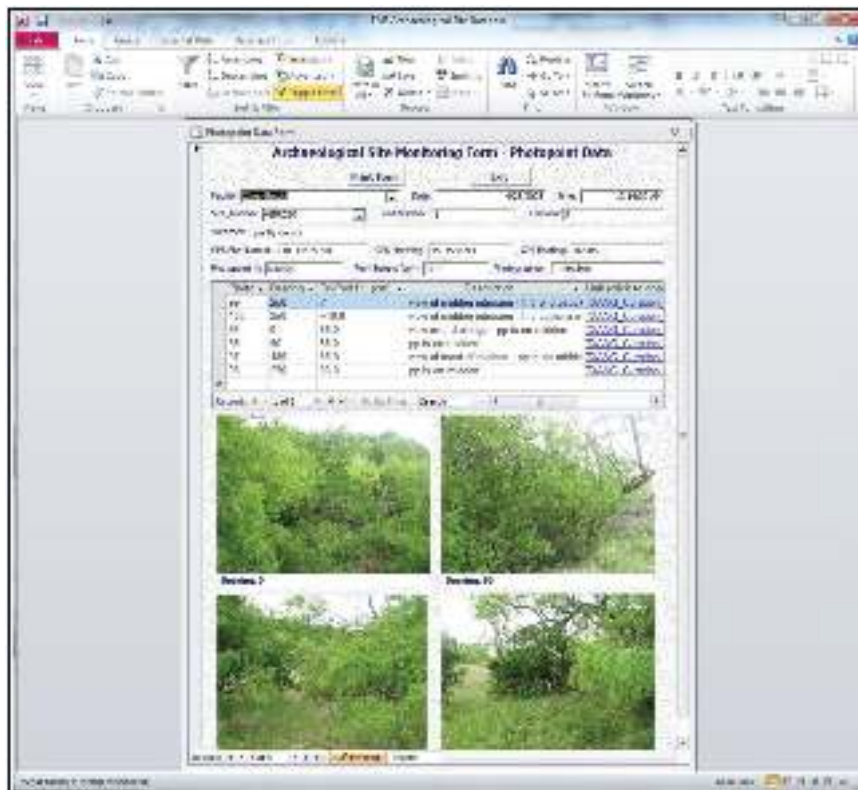


Figure 4-8. Photopoint data form for initial visit to photopoint BOW26 on 41BR250.



Figure 4-9. Navigable panoramic image of 41BR250.



Figure 4-10. Navigable panoramic image of 41BR250 (note that when compared to Figure 4-9 the image is rotated a bit down onto the tree fall).

The screenshot shows a software window titled 'Archaeological Site Monitoring Data Form'. The form is for site '41BR250' and is for a 'Second Visit'. It includes fields for 'Date' (10/10/2014), 'Time' (10:00), 'Observer' (J. Smith), 'Weather' (Sunny), 'Vegetation' (Savanna), and 'Soil' (Sandy). There is a table for 'Plant Species' with columns for 'Species Name', 'Abundance', and 'Notes'. The 'Remarks' section is empty.

Figure 4-11. Archaeological site monitoring data form for a second visit to 41BR250.

The screenshot shows a software window titled 'Archaeological Site Monitoring Data Form - Photopoint Data'. It includes a table for 'Photopoint Data' with columns for 'Photopoint ID', 'Date', 'Time', 'Observer', 'Weather', 'Vegetation', and 'Soil'. Below the table are four photographs of the site, labeled 'Photopoint 24'.

Photopoint ID	Date	Time	Observer	Weather	Vegetation	Soil
24	10/10/2014	10:00	J. Smith	Sunny	Savanna	Sandy
25	10/10/2014	10:00	J. Smith	Sunny	Savanna	Sandy
26	10/10/2014	10:00	J. Smith	Sunny	Savanna	Sandy
27	10/10/2014	10:00	J. Smith	Sunny	Savanna	Sandy

Figure 4-12. Photopoint data form for second visit to photopoint BOW24 at 41BR250.

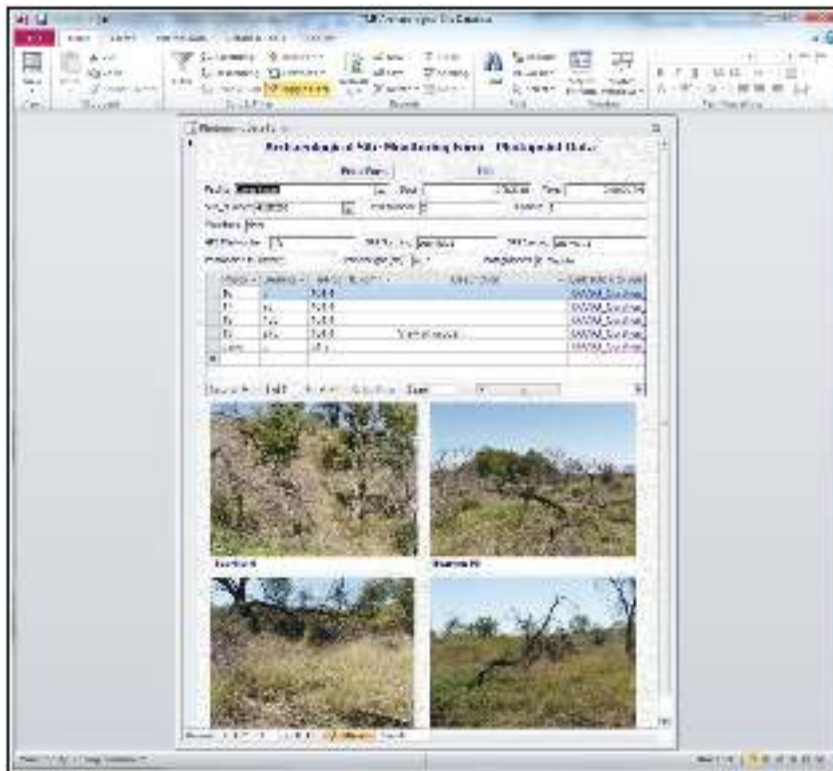


Figure 4-13. Photopoint data form for second visit to BOW25 on 41BR250.

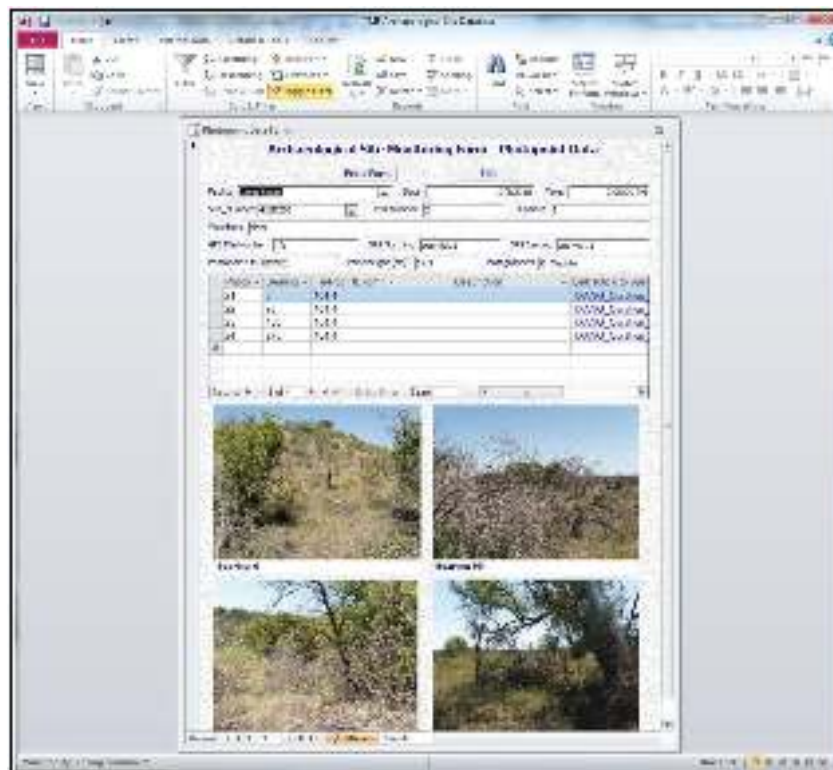


Figure 4-14. Photopoint data form for second visit to photopoint BOW26 at 41BR250.

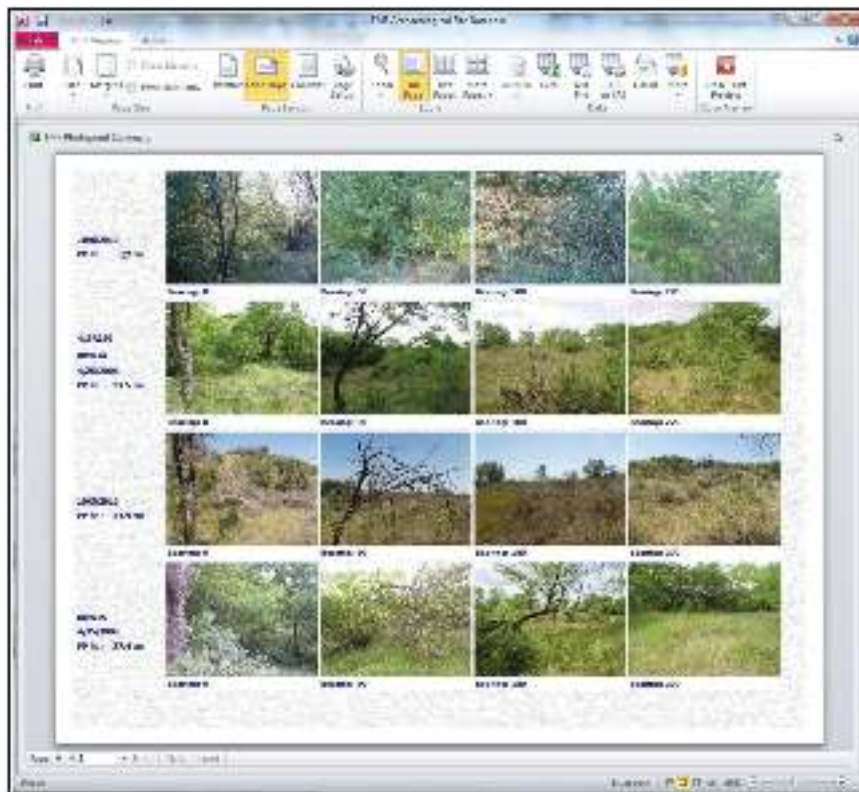


Figure 4-15. Photopoint summary report displaying changes from photopoints on 41BR250.

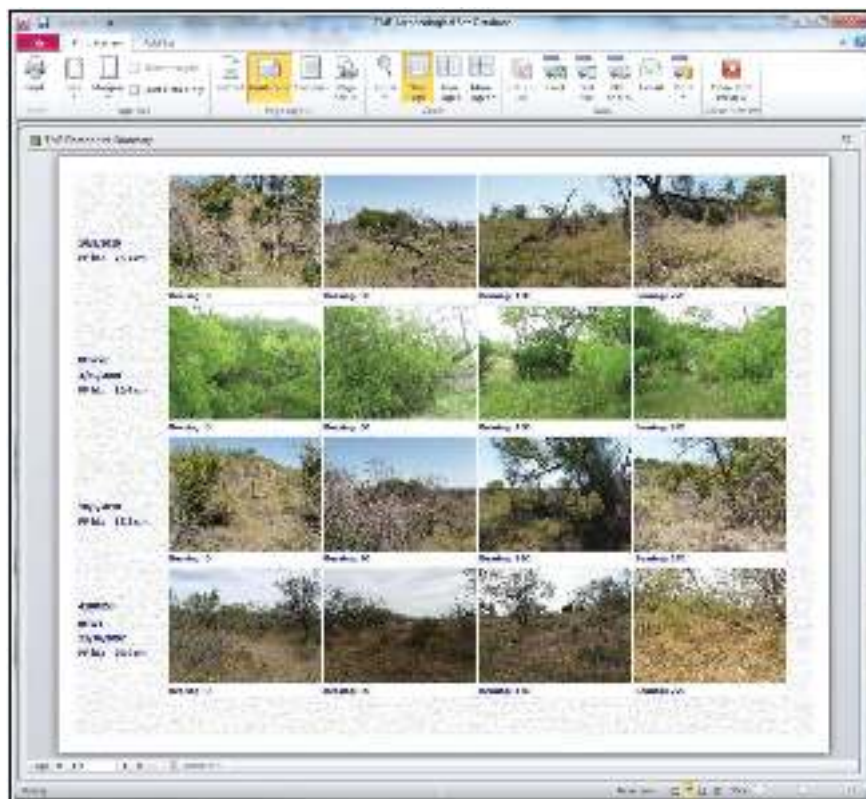


Figure 4-16. Photopoint summary report displaying changes from photopoints on 41BR250.

Documented Damage to 41BR65 at Camp Bowie

Although 41BR65 consists of both a historic and prehistoric component, only the prehistoric occupation was recommended as eligible for the NRHP. This component consists of one burned rock midden and a sparse surface scatter (Figure 4-17). The site, first recorded by Shafer et al. (1975) and tested by Mauldin et al. (2003), was determined to have sufficient integrity to be considered eligible for the NRHP under Criterion D. The circular midden has a slight center depression surrounded by a ring of burned rock and measures 14 m in diameter. It formed at the beginning of the Late Prehistoric period (Mauldin et al. 2003).

When the monitoring system was set up on 41BR65 in April 2008, the midden was overgrown with vegetation, but the overall site condition was recorded as good. The site monitoring data form recorded no disturbance of any kind. The site was revisited in October 2010. Upon entering the site, it was immediately evident that damage to the midden had been caused by military training activities (Figure 4-18). Shells from the firing range located near the site had damaged the midden and the historic component of the site. Shells were noted on the ground, and trees were blown out leaving large holes across the site. A tank target was located approximately 20 m from the midden (Figure 4-19). The damage and changes to the site can be seen on the photopoint summary report (Figure 4-20).

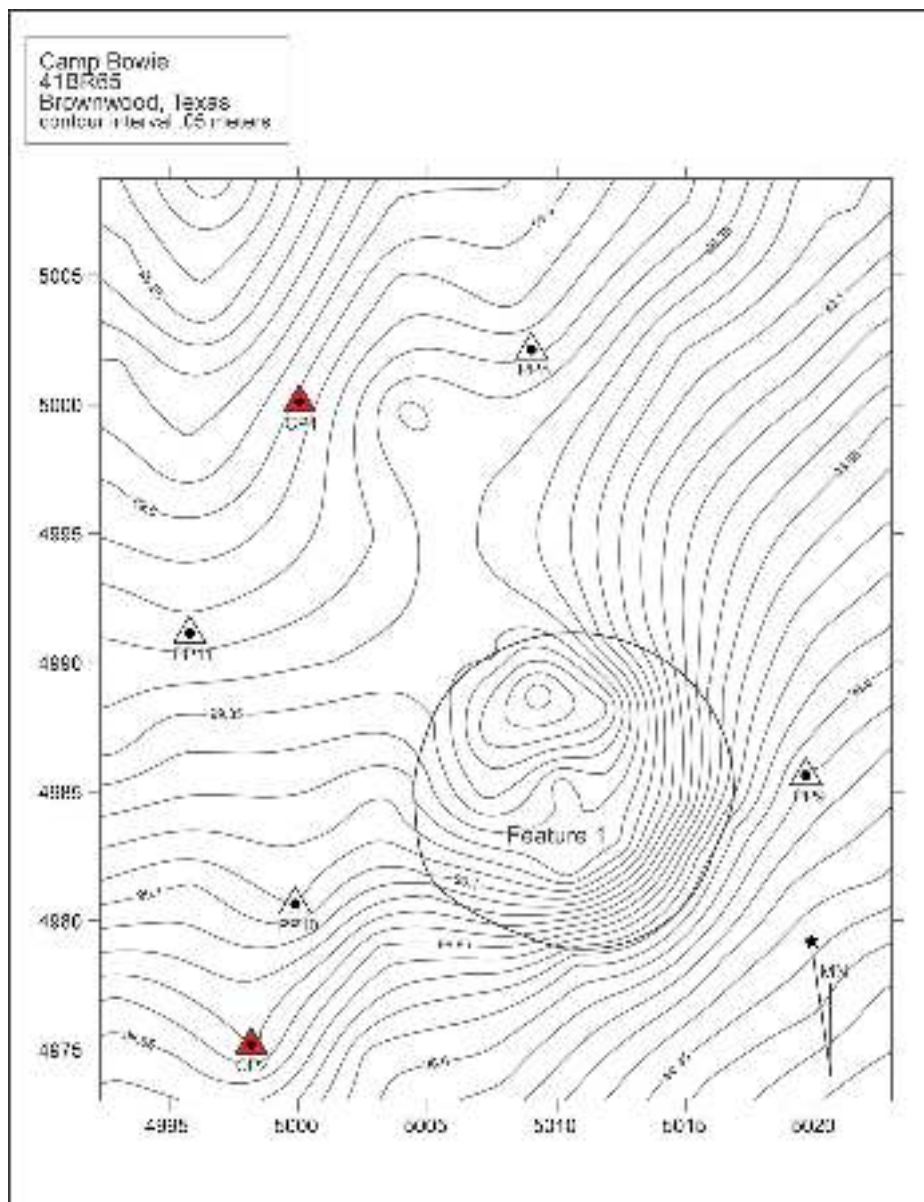


Figure 4-17. Contour map of 41BR65.



Figure 4-18. *Damage from military activities to the burned rock midden on 41BR65.*



Figure 4-19. *Firing range target documented from photopoint BOW09 on 41BR65.*



Figure 4-20. Photopoint summary report showing changes to 41BR65 (note documentation from photopoint BOW09 of the shooting range target to the midden).

Documented Erosion on 41BP392 at Camp Swift

Site 41BP392 is a large prehistoric campsite with a lithic scatter and two burned rock hearths. The hearths are eroding from the walls of a deep gully that runs through the center of the site (Figure 4-21). Radiocarbon assays and a diagnostic dart point suggest that the site was occupied sometime during the Archaic period and in the Late Prehistoric period. Because the site contained intact cultural deposits and good preservation potential, it was recommended as eligible for nomination to the NRHP (Nickels and Bousman 2008; Nickels et al. 2003).

The photopoint monitoring system was set up on 41BP392 in December 2010. The CAR crew noted erosion affecting over eighty percent of the northern portion of the site near the hearths (Figure 4-22). The areas of the site off of the cut were in good shape. The site was revisited in August 2012. With the exception of the center gully, the site appeared to be in good condition. Erosional forces in the center cut are active and extreme. At the time of initial set up, Photopoint SWT21 was 35 cm above the ground surface (see Figure 4-21). It was completely buried in the 20 months of elapsed time between the monitoring visits. The CAR crew relocated the point by carefully pushing the sand around. Approximately 35 cm of sand eroded from the banks and down the gully over SWT21. The photopoint was reset at 19.2 cm above the ground surface.

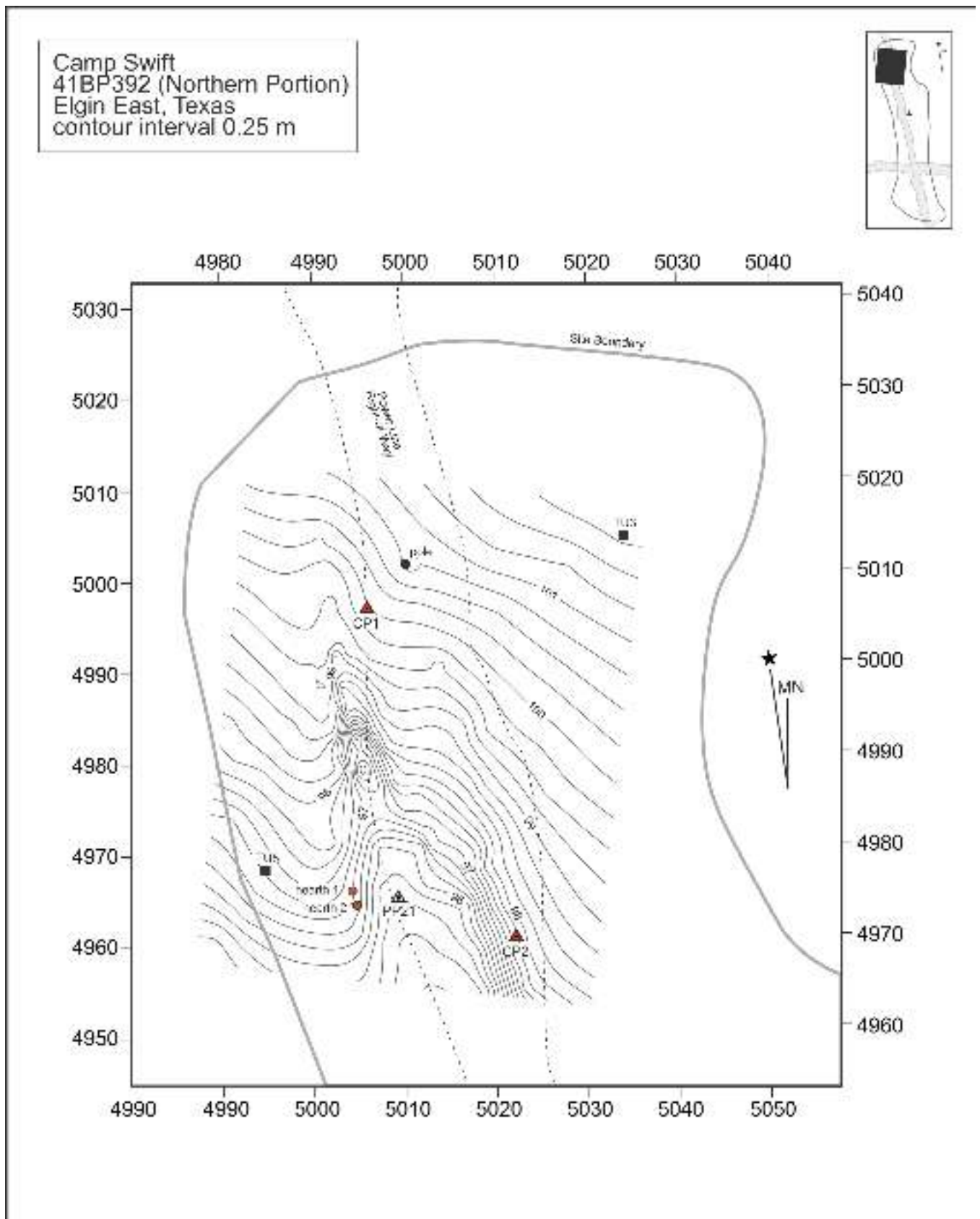


Figure 4-21. Contour map of the northern portion of 41BP392.



Figure 4-22. Gully wall containing two burned rock hearths from photopoint SWT21 at 41BP392.

Chapter 5: Summary and Recommendations

A photopoint monitoring program to document the condition of archaeological sites was developed and installed for the Adjutant General's Office on the six TXMF facilities containing sites eligible for the NRHP. The photopoint system was designed to help Cultural Resource personnel monitor archaeological sites and document site level changes by providing a long-term visual record of site conditions. Forty-five sites are recommended as eligible, including sixteen on Camp Swift, eighteen on Camp Bowie, seven on Camp Maxey, two on Fort Wolters, one on the Eagle Mountain Lake Training Site, and one on Camp Mabry. The photopoint monitoring element consists of replicable photo documentation at set photopoints. Of 105 photopoints, 53 were set up on Camp Bowie, 31 on Camp Swift, 19 on Camp Maxey, and one each on Fort Wolters and the Eagle Mountain Lake Training Site. A series of field forms and reports were used with the standardized

photography to document the condition of the sites. Forms, queries, and reports were updated in a Microsoft® Access database for analysis and review.

Photopoints were established and selected sites were revisited over a five year period, 2007-2012. The examples presented in Chapter 4 illustrate how the system was used to assess threats and changes to cultural resources. The goal of the project was to periodically revisit and utilize the photopoint system on all TXMF eligible sites. The monitoring program has yet to be set up on eight TXMF sites recommended as eligible for the NRHP. One of the sites is on Camp Mabry (41TV1667), one is on Fort Wolters (41PR88), two are on Camp Swift (41BP776 and 802), and four are on Camp Bowie (41BR270, 299, 438, and 477). The CAR recommends establishment of the monitoring system on these sites as well as the initiation of periodic monitoring on all the eligible archaeological sites.

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