# Search for the San Elizario Salt Road

Stephen M. Carpenter

In 1863, the San Elizario Salt Road was built with public funds to provide access to seemingly endless salt deposits in relict lakebeds west of the Guadalupe Mountains in West Texas. At that time salt was more than a basic dietary element; the mineral was vital for life and commerce and was widely used as a food preservative, among other purposes. When the road gave horse-drawn carts access to the salt deposits, local factions fell into a violent conflict for control of the critical resource. The struggle, known as the Salt War of 1877, opened deep cultural rifts in the borderlands. Its resolution ushered in broad changes in the cultural landscape.

Although several possible locations of the historic road have been proposed in the literature, the route has never been positively identified. This article presents archeological and archival evidence to locate the San Elizario Salt Road, describe its historical context, and define its significance.

#### Salt and Destiny in West Texas

In the 1860s and 1870s West Texas was a turbulent frontier. In his first annual address in 1877, President Rutherford Hayes cited increasing turmoil along the Rio Grande as a national concern (Lewis 1920). Within months, the San Elizario Salt War erupted, revealing the depth of political, socioeconomic, racial, national, and ideological tensions in the borderlands. The following brief overview of regional circumstances provides a basic historical context for the Salt Road, which ran through the thick of the conflict (see Ward [1932], Sonnichsen [1961], and Webb [1995:345–367] for more substantive accounts).

From 1850 to 1878 San Elizario was the seat and commercial center of the El Paso District. The town, established as a Spanish presidio circa 1760, maintained economic viability by outfitting streams of overland migrants passing through the area. Salt was among the essential trade commodities, providing a reliable economic mainstay. In historical times, salt served a variety of purposes, including use as a preservative for foods such as beef and pork, as medicine, and for tanning hide. Accordingly, the mineral was a commodity *sine qua non* for those preparing to cross harsh environments as the West opened for settlement.

The Guadalupe Salt Lakes had undoubtedly been known since the earliest times, and people on both sides of the Rio Grande had long considered constructing a road for wagons to exploit the deposits (Ward 1932:20). For a number of reasons, however, mainly accessibility, the San Andreas Salt Lakes in the Tularosa Basin served as the primary source for salt until the early 1860s (Long 1931:216; Ward 1932:20), when private ownership threatened access. In 1862, State Senator Albert J. Fountain, in a scouting party with several San Elizario citizens, pinpointed the Guadalupe salt deposits (Ward 1932:20). At the time, Fountain reported no evidence, such as roads, indicating exploitation of the resource (Ward 1932:20).

With official encouragement and support from public funds, "in 1863 this road was built and opened by the people: henceforth salt was hauled to San Elizario" (Ward 1932:20–21). Ward (1932) cites various historical sources that mention construction of the road at this date, including an 1878 letter from Fountain in Report of the Adjutant General of the State of Texas for 1878 (Galveston News 1878). This report and two other government documents, namely the Annual Report of the Secretary of War for the Year 1878 (Government Printing Office 1878) and El Paso Troubles in Texas (U.S. House of Representatives 1878), provide the main body of historical sources for the Salt Road and War.

## The Rugged Road to the Salt Deposits

San Elizario was located along the Rio Grande (Figure 1) with salt deposits 90 miles to the east. What lay between San Elizario and the remote salt flats was the rugged Chihuahuan Desert basin and range where Apaches still reigned. Lack of water and sparse vegetation provided few resources for the journey and the physical landscape, which was much like it is today (Figure 2), posed several obstacles. On the western end, the Hueco Bolson forms a wide desert basin extending from the Franklin Mountains north of El Paso to the Hueco Mountains to the east. South of the Huecos, abrupt rimrock bluffs mark the Diablo Plateau's western margin, an impassable wall that had to be circumvented. Past the rimrock, the remainder is fairly level ground east towards Guadalupe Peak, the state's highest point. Spurred by necessity, a route to the salt deposits confronted these difficulties.

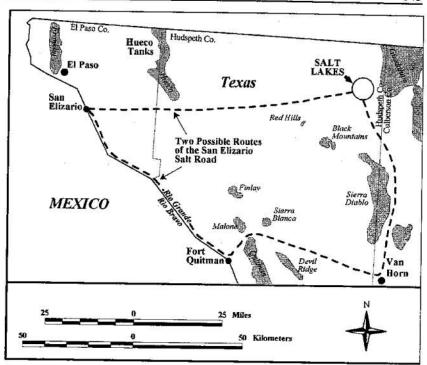


Figure 1. Map of far West Texas.

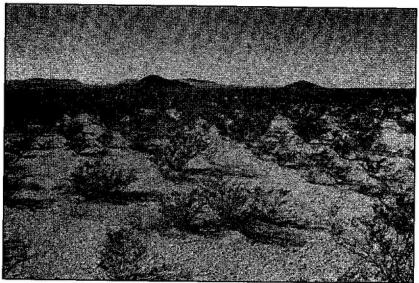


Figure 2. Chihuahuan Desert setting along the road.

The route's destination was the Salt Basin, which lies in the western rain shadow of the Guadalupe Mountains (Figure 3). Extending 100 miles north to south, the Salt Basin is a broad expanse of playas, usually dry but with ephemeral shallow waters in some areas. During the Pleistocene, springs and mountain streams are surmised to have supported a lake or series of lakes (King 1965). With the appearance of the Chihuahuan Desert circa 11,000 years ago, the lakes became playas with gypsum and brines accumulating in them through evaporative concentration. While the large basin contains various precipitates, only two areas, collectively referred to as the Guadalupe Salt Lakes, have economically significant deposits of sodium chloride (table salt). Zimpelman Salt Lake, which extends 1.0 x 0.5 kms, is the only area that still has significant reserves (Boyd and Kreitler 1986:1). Prior to 1900 the "Maverick Salt Basin" several kilometers to the south was also mined, but was presumably abandoned as the deposits were quickly exhausted.

In these lakes, a thin veneer of salt formed, several centimeters thick, atop fine sediments. Historically, the upper brine was harvested by scooping it into piles and hauling it off. Within days the salt layer reformed so that the process seemed to provide an inexhaustible supply. Boyd and Kreitler (1986) provide a

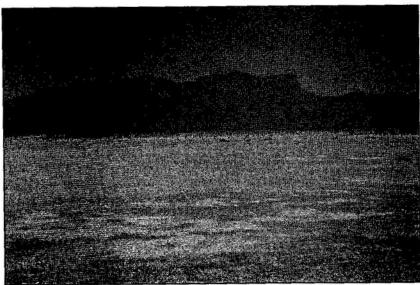


Figure 3. Salt Basin setting with Guadalupe Mountains in background.

geological and chemical explanation of salt regeneration, which was once considered a "miraculous" process. As the upper layer of salt is removed, the region's high evapotranspiration quickly dries out the newly exposed surface causing capillary action to draw subsurface water upward. The water picks up various soluble minerals as it rises and upon reaching the surface, the water evaporates to form a new layer of salt. The particulars of a locale's substrate (e.g., chemical composition and availability of subsurface water for capillary movement) explain why salt deposits form in some areas and not others.

#### The Salt War

The Salt War evolved from myriad long-standing economic, cultural, and political tensions in the region. A principal issue, as noted by Sonnichsen (1961:5), entailed differing fundamental concepts of ownership: the Spanish/Mexican notion of communal property versus the Anglo-American idea of private ownership. As the regional population was predominantly Hispanic, most held a conviction that the deposits belonged to the public domain. Trouble arose when Anglos began making claims on the deposits, as the quintessential opportunist Samuel Maverick did in 1866. His two-section claim failed to include the main deposits, therefore commerce continued. His attempt launched a debate, however, over whether private owners had exclusive rights to the deposits.

A later claim hit the mark. In 1877, Judge Charles Howard, in a move that would cost him his life, surveyed, filed, and claimed the 320 acres covering the primary deposits on behalf of his father-in-law, Major George Zimpelman (occasionally spelled Zimpleman). "Howard, shutting his eyes to the consequences, closed the road and undertook to enforce his rights in the matter of collecting a tax on every cart of salt" (Ward 1932:49).

Howard had long been part of the evolving controversy over the salt deposits. Bold to a fault, he was reportedly the "best shot in the state, his feats with all classes of fire arms bordering on the miraculous" (Galveston Daily News 1877). He incurred the enmity of the local population when he shot and killed Louis Cardis, the well-liked leader who argued for popular rights to the salt. Cardis, an Italian who served with the "hero of two continents" Guisepe Garibaldi, was a stout and affable figure who built

political ties among Mexican Americans throughout much of Texas.

When Howard asserted his claim to the deposits in late 1877 by intercepting a wagon train, resentment boiled over, and San Elizario erupted into a mobocracy. Howard, arrogantly unwilling to heed warnings or compromise, and two associates were seized by the masses and executed by firing squad. Howard, the first to be executed and defiant to the end, issued the order to fire in his own execution. Havoc followed, and in the ensuing bloodshed both sides equally shared in justice and injustice. A few Texas Rangers asserted the ignominious ley fuga (law of flight) and shot Hispanics in the back, while others served their reputations well (Webb 1995). With equal fortitude, some local figures confronted the mob. For fear that the entire border was unraveling, the U.S. Secretary of War ordered federal troops from Fort Stanton, Fort Bayard, and Fort Davis to quell the violence.

In the end, state and federal courts upheld Major Zimpelman's claim and the salt deposits are still generally referred to by his name (see for example Boyd and Kreitler 1986). San Elizario was virtually abandoned as the local residents feared reprisal from federal and state forces, and in 1878, the county seat was moved north to Ysleta (or Isleta). After the railroad was constructed through the area in 1880, El Paso grew into the major center and became the seat in 1884. San Elizario's importance declined rapidly, and accordingly the Salt Road gradually faded from sight and memory. To temper the volatility exposed in the Salt War, Fort Bliss, which had been closed in January 1877, was reestablished in February 1879 after recommendations by the Adjutant General for a federal military presence.

#### **Underlying Causes: A Clash of Cultures**

Borderland interactions often reveal conflicts of divergent worldviews and policies, processes of culture change, and the consequences of settlement in its demand for raw materials. The underlying causes of the Salt War of 1877 can be analyzed from various vantage points. To identify one of these causes, the economic context of the Salt Road and its historical implications are presented here.

The resolution of the conflict over the salt deposits resulted in the ascendancy of Anglo-American common law, which dethroned the prevailing Texas law inherited from Spanish kings. Thomas and Thomas (1982), in an account of the early legal context of mineral ownership of the Sal del Rey salt deposits in South Texas, provide an overview that is applicable to the Guadalupe salt deposit contention. Pertinent parts of their discussion are briefly recounted here, and later tied to the particulars of the West Texas situation.

In 1783, King Charles III of Spain formally decreed ownership of all mineral rights in lands under Spanish rule, a practice that had been general policy throughout the conquest of the New World. At their discretion, kings granted procurement rights, which were subject to payment of the "royal fifth." Upon gaining independence in 1821, Mexico continued the Spanish policy of state (public) ownership, and by default so did the Republic of Texas. The 1836 Constitution of Texas stated all Spanish-Mexican laws were to remain in effect until superseded by subsequent laws. Though Texas adopted common law in 1840, mineral rights were exempt from its purview.

Common law, based on the Latin principal that the owner of the soil owns to the heavens and also to the lower depths (Thomas and Thomas 1982:8; Black 1933:487), was and is fundamental to the United States' legal structure. After joining the United States in 1845, Texas maintained sovereignty over all minerals. With the conclusion of the Civil War, however, Texas adopted a new constitution in 1866 that finally brought mineral policies into accord with Anglo-American common law. "The landowner succeeded to the royal patrimony of the King of Spain" (Thomas and Thomas 1982:12). In other words, private ownership superseded public ownership.

These differing views underlie the Salt War of 1877. The historic conclusions of the conflict in part define the significance of the Salt Road.

#### Search for the Salt Road

In January 2001, archeologists with the Texas General Land Office identified an old road during the survey of a 40-acre tract located along the southern piedmont of the Hueco Mountains in

West Texas. In this area, the feature is visible for roughly 10 miles where it crosses gradual, southern-sloping Quaternary fan and colluvial deposits on the southern Hueco Mountains toeslopes before disappearing beneath modern eolian sands to the west; erosion has effaced the feature to the east. Other than minor erosional cuts, the area is fairly level. The surface geology, significant for the preservation of the road, comprises thin soils formed on a substrate of white calcrete, which is the Jornada geomorphic surface found along mid to upper piedmont-fan deposits of the Hueco and other mountains in the area. This relatively stable surface is among the few areas where the road can still be discerned. While its relevance will be subsequently defined, the historic Padre Mine follows a distinctive outcrop of dark sand-stone on the southern slopes of the Hueco Mountains (Figures 4 and 5).

The trail is clear in many areas as a linear feature etched into the ancient Jornada geomorphic surface and is most easily traced in aerial photos. A slight depression is noted in some of the surveyed stretches, but is not remarkable in most. Initially, the feature was thought to be an old ranch road; however, several archeological attributes suggested the possibility of a historic route.

Found beside the feature, a solder-top hole-and-cap can provided tenuous association with the trail. Use of tin cans in the U.S. began to take hold in the 1840s, but not until the Civil War and thereafter did cans become widespread (Busch 1991:188–189). By 1879–1881 when the Southern Pacific line was constructed through West Texas, tin cans were rather ubiquitous and by the turn of the century, the sanitary can had replaced the hole-and-cap can. Accordingly, this can was probably discarded in the late nineteenth century.

Other archeological evidence suggesting the feature's historicity includes the superposition of natural and cultural features, indicating an earlier age for the underlying trail because most of the overlying features are fairly recent. Dunes that cover the west side of the trail through the Hueco Bolson are historical in age, dating to the late nineteenth and early twentieth centuries (O'Laughlin and Crawford 1977; Monger 1993). The fence line running southwest through the tract is likely 50 or more years old based on its condition; it at least predates early 1970s aerial

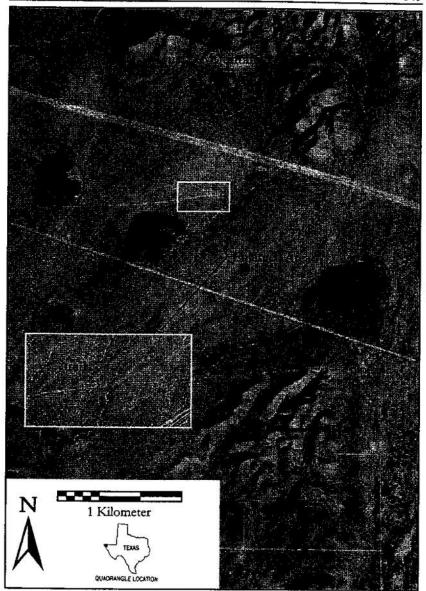


Figure 4. Aerial photograph of trail along Hueco Mountains. Adapted from Padre Canyon DOOO.

photographs. A limited search could not find earlier photos. The road that runs along the northern side of the survey tract appears on the 1942 USGS map. Most other features are too young to be

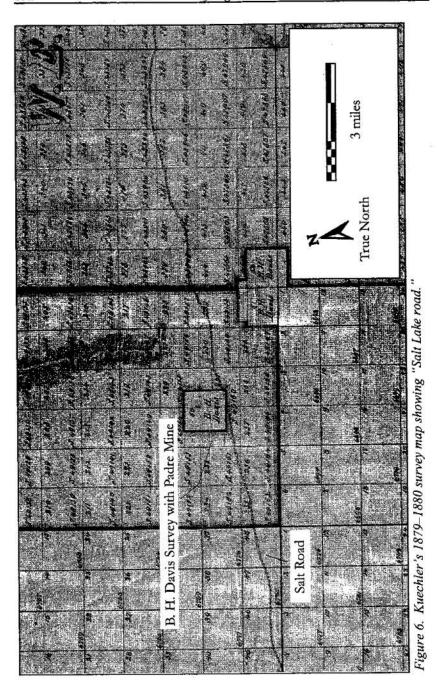


Figure 7. Kuechler's field notes citing the salt road in line 4.

north to the Salt Lakes. This road was apparently used at times, but other references suggest a more direct route. The San Elizario

Salt Road left the Rio Grande, and all other water, at San Elizario and meandered ninety miles over dry and treeless prairie lands, almost to the base of Guadalupe Peak. There was sometimes water in the 'tanks' along the way, such as Hueco Tanks, twenty-six miles out, during part of the year, but the supply was not to be depended upon. It became the custom to carry barrels of water in the empty wagons on the outward journey, to

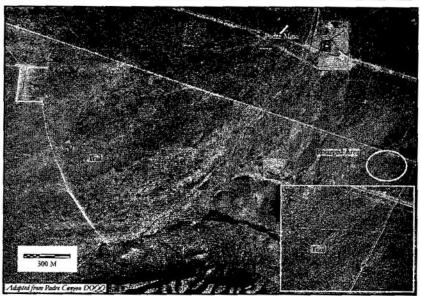


Figure 5. Trail south of historic Padre Mine.

of significance in ascribing a historical age. Thus, overlying dunes, roads, and fence lines suggest a historical origin for the trail, but are rather imprecise determinants of age.

#### What the Records Tell

Subsequent to the fieldwork, the road was delineated to the extent possible on digital orthophoto aerial images and compared to various historical resources. Correlation of the trail with archival sources provides the principal evidence for interpretation of the road as the San Elizario Salt Road. Notably, the road fairly precisely follows an 1879 surveyor's depiction of the Salt Road from San Elizario. However, there is one other possibility that warrants consideration: a spur of the transcontinental Upper Road. Evidence for each interpretation is presented here.

#### The San Elizario Salt Road

The predominance of documentary evidence suggests that the feature marks the route from San Elizario used in the 1860s and 1870s for procuring salt from deposits in the Salt Lakes along the western side of the Guadalupe Mountains. The local inhabitants exploited the Guadalupe salt deposits via at least two distinct routes. One course passed through Fort Ouitman, then north to the

deposits (cf Sonnichsen 1961:7–8; Texas State Historical Association (THSA) 1996:779; Kohout 1996: 763). This circuitous route was, in part, adopted to gain military protection from Apache raids. The other road passed directly from San Elizario to the salt deposits. The feature discussed here is the latter route which, according to sources, was most likely the original road built in 1863.

With the exception of one map, few early sources clearly delineate the trail. The exception is a map made by Jacob Kuechler (on file at the Texas General Land Office) based on 1878 fieldwork for the Texas and Pacific Railway Company. Though details of the vicinity of San Elizario were never filled in, the map depicts a direct road between the city and the salt lakes (Figure 6). His field notes define the route as the "Salt Lake road" (Figure 7) and as drawn, the contours of his road closely match those of the route delineated on digital orthophotos.

Kuechler drew the road's location relative to the B. H. Davis tract, which was one of the few patented sections in 1878. This tract is distinct from the modern section grid as being aslant 11.5 degrees east of north. The significance of the Davis tract is that its patent notes (Figure 8) refer to, and triangulate from, the rock structure of the old Padre Mine, providing a fixed extant point for determining the southern boundary of the tract and the subsequent relative location of the trail. According to triangulations, the Padre Mine is 3,000 to 4,000 feet north of the southern Davis tract boundary (Figure 9). Kuechler drew the road roughly 1,000 feet south of the southern boundary of the Davis tract therefore the depicted road should lie 4,000 to 5,000 feet south of the Padre Mine. The trail identified in the aerial photos is approximately 6,000 feet south of the Padre Mine, within reasonable error for the scale and technology used by Kuechler. After the 11.5-degree variation to derive true north is subtracted, the orientation of the trail depicted on the 1878 map corresponds with the feature passing through the survey area.

Historical verbal references mention both courses of the San Elizario Salt Road. Sonnichsen (1961:7) and TSHA (1996) surmise that the road ran from San Elizario to Fort Quitman, then

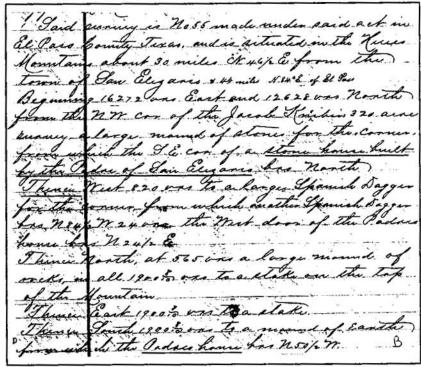


Figure 8. 1882 field notes of B. H. Davis survey witnessing "stone house built by Padre of San Elizario."

camp at a spot about half way, and there leave the barrels of water for use on the return. Thus it is seen that the teams of . . . mules had a long and toilsome journey of ninety miles without water (Ward 1932:23).

Ward does not provide specific primary historical documentation for this description, but correspondence by Senator A. J. Fountain seems to be one of the few sources repeatedly cited in various accounts of the trail.

Several points from Ward's description warrant attention. According to the account, it seems the trail passed Hueco Tanks, although the reference is ambiguous. Hueco Tanks were generally considered a highly reliable water source (see Long 1931:72), and travelers on the Salt Trail seemed prepared for a dry journey, leaving "all other water." A second point is that the trail left "San Elizario and meandered ninety miles . . . almost to the base of

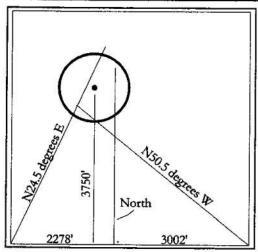


Figure 9. Triangulations to "Padre's house" as cited in the Davis survey field notes. These coordinates tie the southern boundary of the survey to an extant point on the landscape. In turn. Kuechler's drawing of the Salt Road relative to the southern survey boundary can be approximated from the "Padre's house." The road passes south of the southern section boundary. (Lack of convergence of lines indicates margin of error.)

Guadalupe Peak." Two references to a distance of 90 miles indicate a direct road from San Elizario to the Salt Lakes, not via the southern route along the Rio Grande. The route depicted by Kuechler is nearly 90 miles with its slight meanders while the route from San Elizario via Fort Quitman to the Salt Lakes would extend the trip to well over 120 miles. The road from San Elizario past Hueco Tanks would likewise be substantially more than 90 miles.

Webb, though his references are also ambiguous, seems to affirm a direct route between San Elizario and the salt flats.

The road to the Salt Lakes left the Rio Grande—and water—at San Elizario, and in the dry season the patient ox-teams made the round trip of one hundred and eighty miles with no more water than that which the drivers carried in barrels set in the high two-wheeled carts (Webb 1995:347).

Leaving the Rio Grande and water at San Elizario excludes either a course along the river to Fort Quitman or one through Hueco Tanks.

In summary archival evidence supporting the interpretation of the route as the San Elizario Salt Road includes the following:

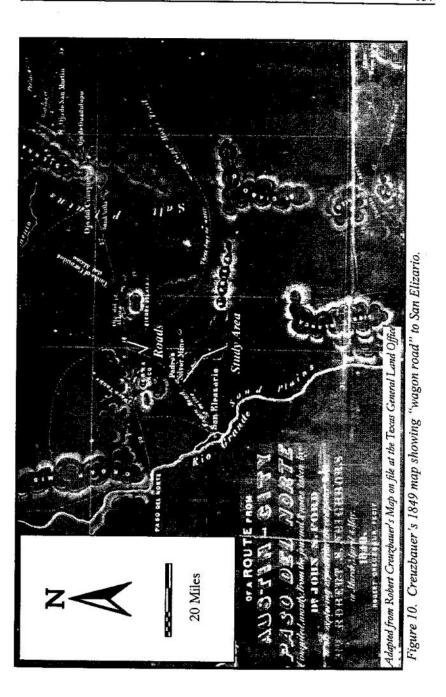
- Correspondence/correlation of orientation and meanders of the road through the study area and beyond with Kuechler's map of the "Salt Lake road."
- General correlation of the feature with Ward's (1932) and Webb's (1995) secondary historical descriptions of the San Elizario Salt Road.

Kuechler's map and field notes are the primary documentary sources for interpreting the road identified in the field and on aerial photographs as the historic Salt Road. The survey notes for the Davis tract are significant for tying Kuechler's depiction to a fixed, extant point on the landscape. Various secondary sources support the equation of Kuechler's "Salt Lake road" with the San Elizario Salt Road that was at the center of the Salt War of 1877.

# An Alternate Interpretation: The Upper Road

Most of the early drawings of the area derive from efforts to negotiate and map an east-west transcontinental route prior to the Gold Rush of the late 1840s. A southern route through the critical ford at El Paso became a focal point of these efforts. By the 1850s, numerous expeditions eventually established two fundamental routes: the Upper Road, or Emigrant Trail, and the Lower Road. The Lower Road, running from Van Horn Wells to Fort Quitman and up the river to El Paso, lay well south of the survey area and is not a feasible interpretation. The Upper Road, however, passed near the Hueco Mountains and consequently warrants some consideration as an interpretation of the road identified on state lands. An 1849 map (Figure 10) by Robert Creuzbauer depicts a spur passing near the study area extending between San Elizario and the Upper Road.

The Upper Road, as marked by Major Robert Neighbors and John "Rip" Ford among other expedition leaders, is a possible but unlikely interpretation of the road. The route generally passed along Guadalupe Peak to Crow Springs to Alamo Springs and onward through the Hueco Mountains. On the western side of these mountains, Hueco Tanks with its perennial water supply was a vital stop. For passing westward through the Hueco Mountains to the Tanks, there were two routes, northern and southern. The northern route went around the north side of the mountains and back down to the Tanks while the southern route is well documented as passing through Hueco Pass, down Pow Wow Canyon,



then north along the level piedmont to the Tanks. This southern route is the main course depicted on early maps, including a detailed 1857 Bureau of Topographical Engineers map. Modern Highway 180/62 corresponds closely with this route.

The Upper Road was the most common route for emigrants heading west in the late 1840s and 1850s, but became obsolete for a time when the Lower Road was fortified at key points. In 1858, the Butterfield Overland Mail adopted and revitalized the Upper Road. A 1941 Geological Survey 15' Hueco Mountains topographic map depicts the "Old Butterfield Trail" coming in from the east and curving south between Cerro Alto and Neville Mountain as it heads towards Hueco Pass. Near Cerro Alto, modern roads overlie the trail and the 1941 map does not depict its subsequent course.

For several reasons the Upper Road is an unlikely interpretation of the feature. Principally, the contours and general orientation of the feature identified in the aerial photographs closely follow Kuechler's fairly precise mapping of the Salt Road. Conversely, the Upper Road as depicted on Creuzbauer's map appears to curve sharply north along the eastern side of the Hueco Mountains rather than continuing eastward. Second, Creuzbaur's route south of the Hueco Mountains may have been more of a possibility rather than a common route. Early explorers were often concerned with identifying feasible routes, many of which proved to be impractical.

Reliable water sources formed the structural backbone of Trans-Pecos emigrant trails; Alamo Springs and Hueco Tanks were the two critical stops in the vicinity of the study area. Any route passing south of the Hueco Mountains would entail an extensive detour far south of both sources. Consequently, the spur to the southwest towards San Elizario, as depicted by Creuzbauer in 1849, may have been a possible route rather than actual one. The principal basis for this supposition is that research on other maps and references of the Upper Road revealed no such southern detour. Nevertheless, an early "wagon road" possibly ran through or near the area, and the search for this road deserves more exploration.

### **Summary and Conclusions**

The trail, recorded as site 41HZ571, is interpreted as the San Elizario Salt Road. While many sources refer to the trail as passing through Fort Quitman, then northward to the Salt Lakes, evidence presented here suggests the historical route was more direct. The road identified during an archeological survey and in historical documentation passed directly from San Elizario to the Salt Lakes. This route is perhaps the Salt Road constructed with public funds in 1863. Moreover, physical traces of a trail closely concur with Kuechler's 1879–1880 map and other historical sources. In areas, the Salt Road may have generally followed an earlier course depicted by Creuzbauer's circa 1850 map of the area based on Ford and Neighbor's 1849 field data. The route likely became obsolete shortly after the Salt War of 1877 when San Elizario quickly lost its sway.

Although from a larger historical perspective, the Salt War might seem to be a rather minor incident, the conflict marked a critical point in history. Two enormous worldviews confronted each other. The heritage of the Spanish crown, which had conquered Central and South America, collided with the Anglo-American culture that was marching west across North America. San Elizario, from early times, was on the border of the two worlds. In 1598 at a place near San Elizario, Juan de Oñate claimed West Texas and lands far beyond as the domain of Spain (Kohout 2002). This claim would later be challenged by the United States' proclamations of "manifest destiny." Until 1877, mineral laws generally maintained the policies descended from the Spanish system. With the conclusion of the Civil War and the national drive for western expansion, the United States, with its laws derived from British colonial policy, sought to establish its legal control over the borderlands. When the Salt Road was built, Texas-Spanish law prevailed. The Salt War finally established Anglo-American law.

The people involved in the Salt War represented both sides. Howard was the brash vanguard of the modern era. A judge and lawyer versed in Anglo-American common law, he could not have been ignorant of the basic legal differences and the consequent opportunities afforded private ownership. He gunned down the champion of popular rights, Louis Cardis, and asserted his legal

rights under common law. The local population, still operating under Texas-Spanish law that provided the framework for the Salt Road construction, maintained their sense of justice and executed Howard and his associates for fundamental transgressions that threatened their livelihoods. These figures were pawns on a large stage.

Today, traces of the road that catalyzed the events can still be seen etched in the bedrock. Like the antique land of Shelley's (1986) traveler, the salt flats are now isolated and abandoned, and "the lone and level sands stretch far away."

#### References Cited

Black, H.

1933 Law Dictionary. West Publishing Company, Washington, D.C.

Boyd, F. M., and C. W. Kreitler

1986 Hydrogeology of a Gypsum Playa, Northern Salt Basin, Texas. Report of Investigations No. 158. Bureau of Economic Geology, University of Texas at Austin.

Busch, Jane

1991 An Introduction to the Tin Can. In Approaches to Material Culture Research for Historical Archeologists. Society for Historical Archeology, California, Pennsylvania.

Galveston Daily News

1877 October 16, 1877, Vol. 36, No. 177.

Galveston News

1878 Report of the Adjutant General of the State of Texas for the Fiscal Year Ending August 31, 1878. Book and Job Office of the Galveston News, Galveston.

Government Printing Office

1878 Annual Report of the Secretary of War for the Year 1878. Government Printing Office, Washington, D.C.

King, P. B.

1965 Geology of the Sierra Diablo Region, Texas. U.S. Geological Survey Professional Paper 480. U.S. Geological Survey, Washington, D.C.

Kohout, Martin Donell

1996 Hudspeth County. The New Handbook of Texas. Volume 3:763. Texas State Historical Association, Austin.

2002 San Elizario, Texas. The Handbook of Texas Online. http://www.tsha.utexas.edu/handbook/online/articles/view/SS/hjs5.html.

Lewis, William Ray

1920 The Hayes Administration and Mexico. Southwestern Historical Quarterly 24(1):140–153.

Long, Grace

1931 The Anglo-American Occupation of the El Paso District. Master's thesis, University of Texas at Austin.

Monger, H. Curtis

1993 Soil-Geomorphic and Paleoclimatic Characteristics of the Fort Bliss Maneuver Areas, Southern New Mexico and Western Texas. Historic and Natural Resources Report No. 4. Environmental Management Office, Directorate of Installation Support, Fort Bliss, Texas.

O'Laughlin, T. C., and R. Crawford

1977 Modern Vegetation of the Study Areas. In Settlement Patterns of the Eastern Hueco Bolson, by M. E. Whalen, pp. 191–198. Centennial Museum Publications on Anthropology No. 4. University of Texas at El Paso.

Shelley, P. B.

1986 Ozymandias. In *The Norton Anthology of English Literature*. Volume 2:691. W. W. Norton and Company, New York.

## Sonnichsen, Charles L.

1961 The El Paso Salt War (1877). Texas Western Press, El Paso.

#### Texas State Historical Association

1996 Salt Basin. *The New Handbook of Texas*. Volume 5:779. Texas State Historical Association, Austin.

#### Thomas, A. V., and A. J. Thomas

1982 Sal del Rey: Who Owns the Mineral Rights in Texas?

Journal of the American Studies Association of Texas
13:8-13.

# U.S. House of Representatives

1878 El Paso Troubles in Texas. House Executive Document No. 93, 45th Congress, Second Session.

## Ward, Charles Francis

1932 The Salt War of San Elizario (1877). Master's thesis, University of Texas at Austin.

## Webb, Walter Prescott

1995 The Texas Rangers, A Century of Frontier Defense. Second Edition, Fourth Printing. University of Texas Press, Austin.