CORDIER ESTATES, INC.

STE. GENEVIEVE Wines

Director,
Bureau of Alcohol, Tobacco and Firearms
1200 Pennsylvania Ave.,NW
Washington, DC 20226

Dear Sir,

We request that "**Escondido Valley**" in Pecos County, Texas be established as an American Viticultural Area. It is our desire to produce Estate Bottled wine at the winery and vineyards located in the requested Viticultural Area.

Our petition does not include the University of Texas Systems Experimental Vineyard which is not a commercial operation and is located in the Bakersfield Valley east of the requested Viticultural Area. To our knowledge the experimental vineyard and the 1018 acre vineyard leased by Domaine Cordier U.S.A. are the only producing vineyards in Pecos County.

It is felt that the various published historical documentation and maps furnished as Exhibits to this petition establish the name of the requested Viticulture Area as "**Escondido Valley**". The historical documentation furnished includes maps and references to data published as early as 1842 and as recent as 1990.

Specific boundaries of the requested Viticulture Area are outlined and supported by geographical features including elevations of the valley floor, the base are of mesa ranges and passes out of the valley.

Distinguishing features, in addition to the above, are furnished (Published Documentation) regarding the existence of Escondido Springs, Escondido Creek and references to the requested Viticulture Area as being a valley. In addition, climatological data is furnished documenting that both rainfall amounts and average temperatures are both unique to the Viticulture Area requested.

Copies of the above referenced documentation are furnished as exhibits and a part of the particular topic to which they are applicable.

Winery
P.O. Box 697
Fort Stockton, TX 79735
Telephone (915) 395-2417
Telecopier (915) 395-2431

Headquarters
85 N.E. Loop 410
San Antonio, TX 78216
Telephone (512) 366-4961
Telecopier (512) 366-0526

We specifically prefer the name "**Escondido Valley**" and feel that the documentation of the number of documents furnished justify the name. Our second prpeference would be "**Escondido Springs**" or "**Escondido Creek**".

It is requested that you contact me at the San Antonio office (512) 366-4961 if additional information is needed. Janine Vinson, our San Antonio office manager, always has my travel schedule and can usually find me very quickly.

Very Truly Yours,

Leonard Garcia,
Vice President

LG/bp

OUTLINE OF DOCUMENTATION SUPPORTING THE NAME

ESCONDIDO VALLEY

FOR THE VITICULTURE AREA.

There are a number of written historical references to the name "ESCONDIDO" in various books and maps pertaining to the areas of the winery and vineyard location.

Colton's new map of Texas locates the west springs and refers to what is now called Tunis Creek as Escondido Creek (Exhibit I - Colton's Map)

A 1849 map, furnished by Dr. McKinney, with the University of Texas Land Systems, which shows routes from San Antonio to El Paso, two references are present "Ojo Escondido" (hidden eye) and the location of the Comanche Trail to Mexico "Loss Spring Comanche Trail to Mexico".
(Exhibit II - Letter from Charles McKinney - UT Lands)

The second map from Dr. McKinney has no tangible reference to the location of the vineyards but is as he states, interesting in that it locates the various Indian Nations active in the area and I suspect they named a number of the geographic features of this area. This is especially true of the Kiowa and Comanche tribes which dominated the area until the old frontier forts were reopened or new ones built by the Union following the Civil War.
(Exhibit III - Letter from Charles McKinney - UT Lands)

We are using the much more distinctive separation of valleys recommended by Dr. McKinney. Copies of several pages from "Pecos County History" Volume I (edited by Marsha Lea Daggett Ph. D.) are attached. On page seventeen (17) a series of three (3) springs known as the upper, middle and lower "Escondido Springs and the creek now known as Tunas Creek (was called "Escondido Creek") is identified. Tunis creek is an assumed name used late in the nineteenth century. Page 20 locates the west (upper) spring as being twenty-six miles east of Fort Stockton.
(Exhibit IV - Pecos County History Vol. I)

Page 362 of Springs of Texas further defines the location as being near the restored Escondido Stagecoach Stop. The location is actually one-half mile southeast and below the mesa edge where the replica of the old stage coach station now stands. The historical marker refers to the site as the Tunis Creek Stage Station.
(Exhibit V - Springs of Texas)
(Exhibit VI - Photo of Stagecoach Stop)

In addition to the distinguishable feature that Escondido Creek was fed by the upper middle and lower Escondido Springs, it also was and still is fed by drainage principally from Six Shooter and Monument Draws. The creek bed is normally dry except during times of heavy and continual rainfall. In late August of this year, following some ten

(10) inches of rain we were unable to cross the creek which runs between the vineyard and winery area because of high water levels.

In "Never Again" , Volume 1, by Clayton Williams, the few and hidden springs are referred to as in the mesas (page 158). He also includes a map of the Comanche War Trails through Central Pecos County. This map locates Tunis (Escondido) Creek and describes the springs as being located about three miles apart.
(Exhibit VII - Never Again Vol. 1)

In "Never Again" , Volume 3, by Clayton Williams, on page 41, he describes an Indian attack at Escondido (Tunis). He also states this occurred at the head of the spring. He also (on page 20) identifies (the upper) Escondido (Tunis) Spring as gushing from the limestone bluff on the North side of the Valley. He further identifies the location as Tunis Valley (assumed name). The eastern boundary of the Valley is described as a divide beyond Alter Hill west of Iron Hill (7 mile mesa) and being a short distance east of Awache (Comanche Springs). Both Comanche Springs and Iron Hill (7 mile mesa) are located on Clayton Williams's map.
(Exhibit VIII - Never Again Vol. 3)

Whiting's men apparently rode a northeasterly course from Comanche Springs to below 7 mile mesa (which is also located on the United States Geological Survey map as being 3000 feet at the base and rising to 3210 feet and then generally southeast to the upper Escondido Springs. I have not been able to identify what Whiting called The Alter. Perhaps the most authoritative description of the location of the requested Viticulture Area is furnished by Mary Kay Shannon, who is a knowlegable historian, the Director of the Historical Society, Curator of the Annie Riggs Memorial Museum and Reconstructed Buildings at Old Fort Stockton, located at the Comanche Springs site in Fort Stockton. She describes the area as Escondido Valley and identifies the lower Escondido Springs as being approximately 50 yards south of Escondido Creek and 200 yards north of the ruins of the lower Escondido Stage Stop on the Overland Mail Route. This area and location are further referenced in Sharps Rifles and Spanish Mules which is also attached as an enclosures to this petition. Miss Shannon further states that Tunis and Escondido are synonymous when referring to the three springs, creek and valley.

(Exhibit IX - Mary Kay Shannon's Letter)

In the Springs of Texas, very specific locations of all three springs is given.

(Exhibit X - Springs of Texas)

The east (lower) Escondido Springs is described as being twelve (12) kilometers west of Bakersfield on Sam McKenzie's Ranch (now the Walker Ranch). They are described as being located at the base of a large mountain 50 yards south of the road. The mountain referred to is apparently Big Mesa, identified on the United States Geological Survey Map along with East Escondido Springs. This coincides with Mary Kay Shannon's description of the Springs location. Reference is also made to the fact that a stage stand once stood here which further supports Miss Shannon's description of the location. The location and description of the Middle and West Upper Escondido Springs supports information from other sources furnished previously in this petition.

In "Sharps Rifles and Spanish Mules" the San Antonio to El Paso mail 1851-1864, Wayne Randolph Austermanis' Dissertation, submitted to Louisiana State University as a partial requirement for a degree of Doctor of Philosophy, he quotes from the Life and Times of George Foster Pierce who traveled the route by stagecoach in 1858-59. Page 91 describes his trip beginning at Comanche Springs and traveling East. His description and location of the springs agree with those furnished from other sources. His observation that the Upper Escondido Springs lay at the foot of a mountainous pile of volcanic rock coincides with the location of the replica of the original stage coach stop rebuilt at the end of the mesa, of which a large portion of

the height was removed when I-10 was constructed. The dry creek bed of an intermittent stream he describes is probably the drainage from Comanche Creek, Six Shooter and Monument Draw identified on the United States Geological Survey Map outlining the boundaries of the requested Viticulture Area. A reference is also made to Squaw Teat Peak which is identified on the United States Geological Survey Map just North of I-10 and West of the pass we are requesting be the west boundary for the requested Viticulture Area. This is the point where the Escondido Valley ends and the larger Bakersfield Valley begins. These geographic features are furnished later in the petition as a description of boundaries.
(Exhibit XI - Sharps Rifles and Spanish Mules)

Reproductions of the maps and drawings and/or photos of the springs and country side are included but the reproduction is very poor as was that of the source material.

Although documented evidence could not be found, many members of the old settler families told me that the Indians called the area, we are requesting as the Vitaculture Area, "Valle Escondido" (Hidden Valley - in Spanish). This means the same as the reference on the 1849 map, furnished by Dr. McKinney to "Ojo Escondido" (Hidden Eye). I assume this reference means hidden from the eye which would identify the location as "Valle Escondido" or "Hidden Valley" . A large number of

geographic features such as springs and mesas were named by the Indians, especially the Apache and Comanche tribes, who were fluent in the Spanish language -- I do feel that historic documentation has been furnished that Tunis and Escondido are the same when referring to the Springs and the Creek and that the requested Viticulture Area as described is "Escondido Valley" .

A GENERAL NARRATIVE OF THE BOUNDARIES

OF THE REQUESTED

VITICULTURE AREA

STARTING AT THE NORTH WEST CORNER.

Begin at the replica of the Tunis Creek Stagecoach Station, which is 22 1/10 miles East of Fort Stockton on a sign marked rest and picnic area on the South side of I-10. Follow I-10 in a general easterly direction for a distance of approximately ten miles. At this point the southeastern tip of Big (University) Mesa decreases in elevation to approximately 2600 feet. Tunis or Escondido Creek crosses I-10 less than 200 yards south of this point, which is the pass into the Bakersfield Valley. It is also approximately four miles west of Bakersfield and six miles east of the winery. From this point follow the trail from Tunas (Escondido) Creek in a generally Southerly direction for approximately five miles to the mouth of a small creek at the base of the McKenzie Mesa Range. At this point the elevation rises very quickly to 2900 feet. The line then ranges along the Mesa Range base in a northeasterly direction for approximately two and one half miles. The line then ranges along the base of the McKenzie Range in a south and southwesterly direction approximately three miles to a point one mile south of the North face of Sky Scraper Peak. The line then runs North 1 mile along the East side of Sky Scraper Peak and 1 mile West along the Northern base of Sky Scraper Peak. This point is the North West Corner of Sky Scraper Peak the line then runs South approximately 1 mile to the base of the McKenzie Range. From here the boundary line follows the North Base of the McKenzie Range for approximately 1 1/2 miles in a North Westerly direction then approximately 1 1/2

miles in a south westerly direction along the base of the McKenzie Range. The line then runs in a North Westerly direction approximately 2 1/2 miles. This point is approximately 1 1/2 miles South of Darrell's Peak. The line then runs in a South Westerly direction along the Mesa range base approximately 2 miles, Westerly along the base approximately 1 1/2 miles and then approximately 1 1/2 miles due North. This point represents the Eastern end of the McKenzie Range and the South side of the West pass out of the Valley. The line then runs in a northwesterly direction for a distance of approximately two and one half miles to the east side of a bluff and I-10 and East approximately 2 miles to a point directly South and below the replica of the Tunis Creek Stagecoach Station. There is a steep incline up a limestone hill and approximately 50 feet to the station which was the original starting point.

NOTE: The boundary line, when identified as following the mesa base, is at the 2900 elevation level unless specified differently.

DISTINGUISHABLE GEOGRAPHICAL FEATURES

OF THE REQUESTED VITICULTURE AREA

FROM SURROUNDING AREAS

The requested viticulture area is virtually surrounded by Mesa Ranges with exception the East and West passes out of the valley. These Mesa Ranges generally rise to an elevation of from 3200 to over 3400 feet which is 600 to 800 feet above the elevation of the valley. The areas West of the pass out of the valley rises sharply from 2900 to 3200 feet. Fort Stockton appears to be at 3000 to 3100 feet. The area South and Southwest of the valley rises from 3200 to 3500 feet. The area North and Northwest of the valley is mostly at 2900 to 3000 feet and, on the Mesas, 2300 to 2500 feet which are actually foothills of the Mesas. The area to the Northeast from the pass to Bakersfield Valley drops sharply in elevation down to approximately 2200 feet just West of the Pecos River. The area to the East and Southeast consists almost totally of Mesa Ranges of up to 3000 feet plus in elevation.
(Exhibit XIV - USG Map NH 13-6, V502, 1973 revised)

Monthly and Annual climatologilogical data (Rainfall) was supplied by Mr. Richard W. Patterson Jr. with the Texas Agricultural Extension Service, Texas A & M University System, Fort Stockton, Texas. The Bakersfield measurements were taken at the weather station ten miles east of the winery (six and one half miles east of the requested viticulture area, and coincides with those we have taken in the vineyard starting in 1984.

The Fort Stockton measurements were taken at the weather station in Fort Stockton approximately 25 miles west of the winery (19 miles west of the requested viticulture area).

The Ozona measurements were taken at the weather station in Ozona approximately 81 miles east of the requested viticulture area.

Measurements from the Bakersfield area are used as those of the viticulture area since it is the nearest official documented information. Eventhough the Fort Stockton Station is only nineteen miles west of the requested viticulture area, there are distinguishable differences in the amount of rainfall in the requested viticulture area. These differences are 1.33 inches average annually. Approximately one inch (.85) occurs during the growing season, March through August. Bud break usually occurs in the vineyard during the second or third week of March and Harvest usually begins the third or fourth week in July for white varieties and ends the third or fourth week of August for the red varieties. Differences in the rainfall of the requested viticulture area when compared to Ozona measurements are more substantial; approximately four inches (3.99) annually of which approximately two inches (1.75) occurs during the growing season.

We have only 1988 and 1989 monthly rainfall measurements in the vineyards. The average annual rainfall for this period was 12.8 inches and the average during the growing season was .95 inches. These are fairly close to the Bakersfield totals of 14.74 and .85 inches respectively. However, rainfall in September 1988 was recorded at 9.33 inches. The total for 1989 was 7.52 inches. September 1989 was 1.3 inches. Although we do not have documentation to prove the point; we believe that the vineyards receive less rainfall and experience a higher temperature than even the Bakersfield station only 8 miles east of the vineyards. If this is the case, the distinguishable differences between the requested viticulture area and Fort Stockton to the west and Ozona to the east, are even greater than the ten year documented detail reflects.

(Exhibit **XV** - Memo with enclosures from Richard Patterson)

Of course the vineyards are irrigated from wells utilizing a pressurized drip system. Obviously rainfall in west Texas is insufficient to raise crops which accounts for the lack of farming operations in the area. The only crop production that we are aware of is:

a) East of the vineyard, Paul Yeager is farming a small area. The principle crops are vegetables and melons. This area is included in the requested viticulture area.

b) There is a farming operation approximately ten miles north east of the viticulture (North of Squaw Teat Peak) Crops are grain and hay. This is located in Bakersfield Valley.

c) The forty acre University of Texas experimental vineyard (not a commercial operation) is located approximately six miles northeast of the winery on the Northside of I-10 in the Bakersfield Valley.

d) Alfalfa is grown (by Clayton Williams) approximately fifteen miles west of Fort Stockton (29 miles west of the requested viticulture) which he uses to feed his beef cattle operations. There is also a large pecan orchard in the same general vicinity.

e) There are some farming operations in the Coyanosa area approximately twenty miles northwest of Fort Stockton (Forty-six miles west of the winery). Their crops are bell peppers, onions and cantaloupe.

f) The largest commercial farming operations are around Imperial, approximately twenty miles north of Fort Stockton (38 miles northwest of the winery). The principle crop is "Pecos" cantaloupes.

As previously stated, the afore mentioned are the only commercial farming operations within the general area of the requested viticulture area. As a matter of fact, most of the land used in "e" above is located outside of Pecos County (Reeves and Ward Counties) and "f" above in Ward and Crane Counties. All of these are irrigated.

The only two vineyards in Pecos County are our's and the University of Texas experimental vineyard. I do not expect additional acreage to be planted in wine grapes in the foreseeable future. The production of juice, in the state, now is well ahead of sales volume for all Texas Brands.

There are substantial differences in the quality of water available for irrigation in the requested viticulture area as opposed to the surrounding areas.

Mr. Terry Whigham with the U.S. Soil Conservation Service plotted this information from details furnished in Bulletin #601, prepared by the U.S. Geological Survey in October 1961 and accompanying map. This information was plotted by Mr. Whigham on a ranch ownership map of Pecos County. Most of

Mr. Whigham's test results are recent readings. He also states in his letter to Mr. Richard Patterson that in some of the area only data taken in earlier years was available. (Exhibit XVI - Terry Whigham's letter to Mr. Richard Patterson

We requested that Mr. Whigham test all of the wells, utilized for irrigation, in the vineyard and provide electric conductivity readings since this was the criteria used on wells he had tested in areas outside the requested viticulture area. The information was furnished by Mr. Whigham and is included as Exhibit IV. The higher EC wells are used only for backup during peak dry periods. All winter watering is done utilizing the low EC wells.

Mr. Patterson also plotted the average monthly temperatures in Bakersfield (VA), Fort Stockton and Ozona for the period 1979-1989. These are the same locations used for rainfall detail. This information is graphed by month and the source is NOAA Climatological data.

This detail shows that the average monthly temperature at the requested viticulture area is 1.83 degrees warmer than Fort Stockton (26 miles to the west of the requested viticulture area) and 3.5 degrees warmer than Ozona (81 miles east of the requested viticulture area). The differences during the growing season are even more distinguishable; the average temperature from March through August at Bakersfield (viticulture area) is 2.58 degrees higher than Fort Stockton and 4 degrees higher than Ozona.

Exhibit XVII - Richard Patterson's Computer Detail

When the distinguishable differences in temperature and rainfall are considered, one might state that the requested viticulture area almost has a mini-micro climate even from the nearest city, Fort Stockton, only twenty-six miles to the West. Our winemaker, Mr. Jean-Louis HABERER has voiced this opinion on several occasions.

GEOGRAPHIC FEATURES OF THE BOUNDARIES OF THE REQUESTED VITICULTURE AREA

The elevation of the vineyard and the majority of the valley floor is 2600-2700 elevation. The base of the Mesa Range is approximately 2900 feet elevation. Soil association color maps seem to support that elevations above 2900 feet are not suitable for crops. Almost 100% of the requested Viticulture's Area boundaries are drawn at the 2900 feet level. The only exception to this are the passes closing both ends of the valley and individual mesas and peaks located in the valley. These are predominantly located on the United States Geological Survey Maps and described in the narrative tracing the boundaries of the requested Viticulture Area.

(#5) Reagan-Hodgins-Iraan Association seems to follow the general boundaries of the requested Viticulture Area.

(#1) Ector-Sanderson-Rock outcrop starts at approximately the 2900 foot elevation level.

The general soil map for Pecos County is attached reflecting the approximate boundaries of the requested Viticulture Area. (Exhibit XII - Colored Soil Map)

Fourteen color photos taken from approximately the center of the vineyard which form a total 360 circle (taken approximately 10 feet elevation from ground level) are attached.

(Exhibit XIII - Photos)

These identify the boundaries of the Valley (requested Viticulture Area). The Valley appears to be totally surrounded by Mesa Ranges in the photos. This is due to shooting the photos south of the narrow passes at the East/West end of the valley and the Northern tips of the mesa ranges at both passes hide the actual passes.

Exhibit II & III - Letter from Charles McKinney

THE UNIVERSITY OF TEXAS SYSTEM
UNIVERSITY LANDS
SURFACE LEASING
P. O. BOX 553 MIDLAND, TEXAS 79702 TELEPHONE 915/684-5886

STEPHEN HARTMANN
MANAGER OF UNIVERSITY LANDS-
SURFACE INTERESTS

February 2, 1990

Mr. Joe Flynn
1437 Dorris Street
Hurst, TX 76053

Dear Mr. Flynn:

Attached are copies of part of two old maps that I have. Unfortunately, they do not help very much. The oldest map is from 1842 and it is mainly a land grant map and is not very specific nor accurate. It is very interesting to study. The newer map is from 1849 and is of the reconnaissances of various routes between San Antonio and El Paso. The only reference to the vineyard ares designated as "Ojo Escondido."

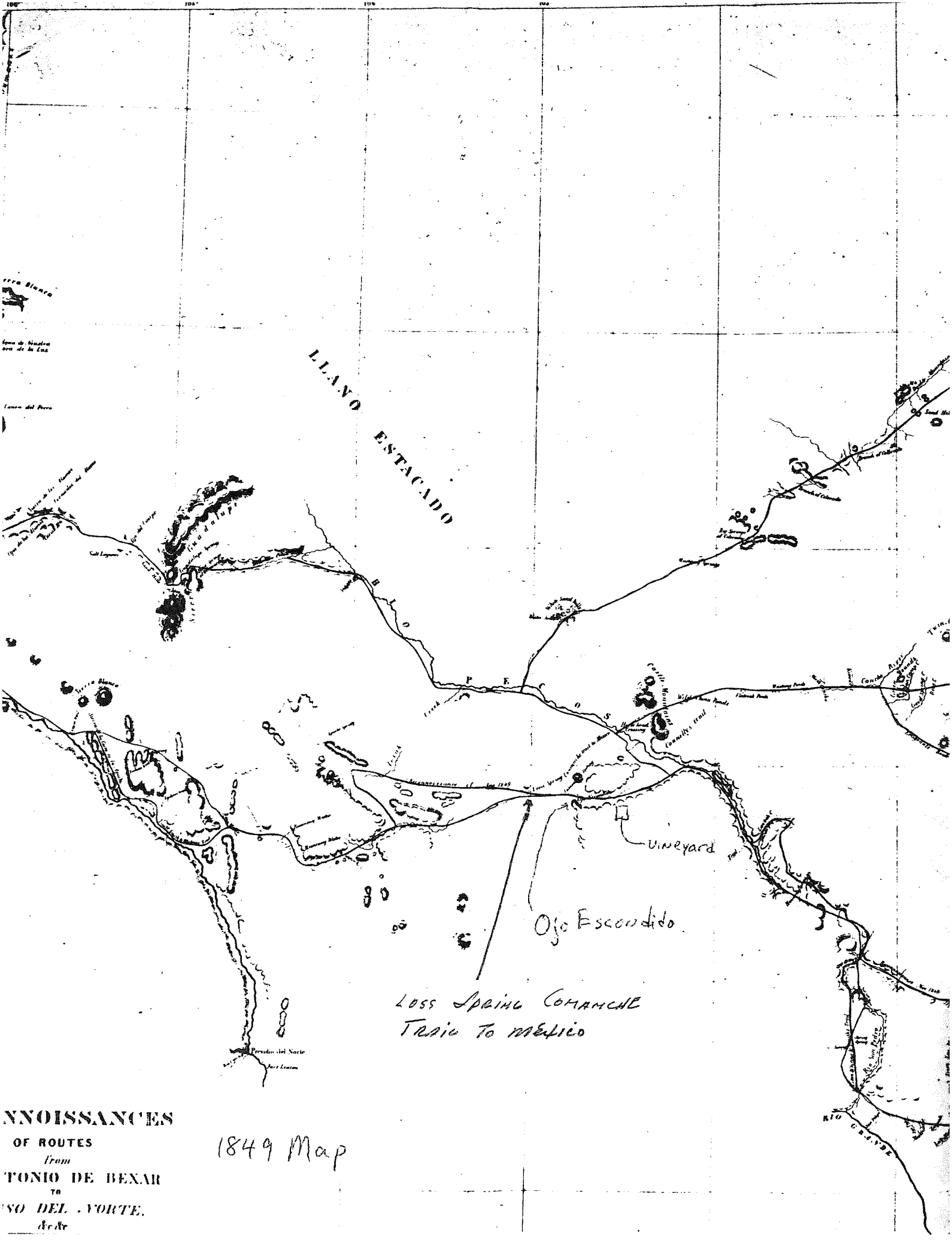
After our telephone conversation, I went out and looked at the proposed viticultural area. The point at which you want to separate the Bakersfield Valley from the Esconditio Valley does not exist to the human eye. There is a much more distince separation of valleys west of the winery and between the two different blocks of University land than any separation toward the Pecos River.

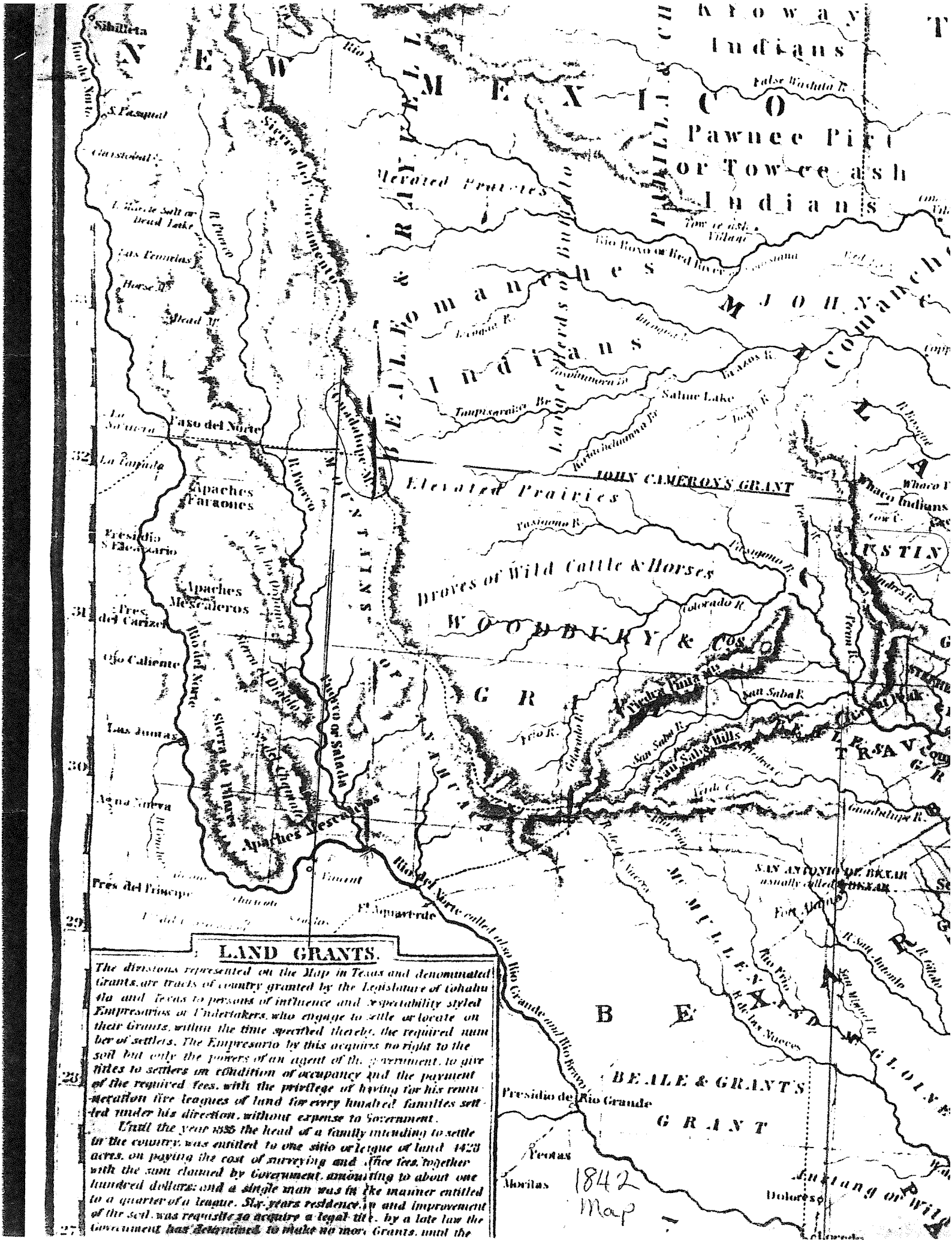
I hope this helps. Good luck!

Sincerely,

Charles O. McKinney

Charles O. McKinney
Director of Research


LLANO ESTACADO
Vineyard
Ojo Escondido
Loss Spring Comanche
Trail To Mexico
1849 Map
NNOISSANCES
OF ROUTES
from
TONIO DE BEXAR
TO
SO DEL NORTE.



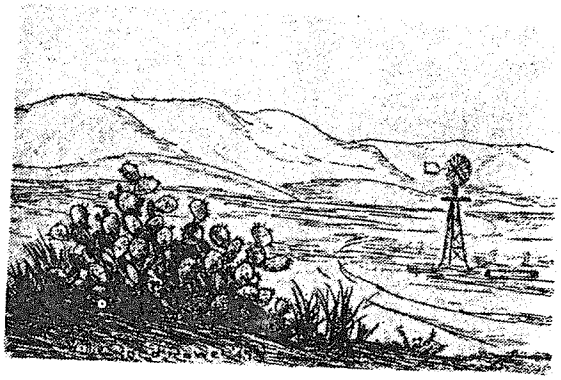
LAND GRANTS.

The divisions represented on the Map in Texas and denominated Grants, are tracts of country granted by the Legislature of Cohahuila and Texas to persons of influence and respectability styled Empresarios or Undertakers, who engage to settle or locate on their Grants, within the time specified therein, the required number of settlers. The Empresario by this acquires no right to the soil but only the powers of an agent of the government, to give titles to settlers on condition of occupancy and the payment of the required fees, with the privilege of having for his remuneration five leagues of land for every hundred families settled under his direction, without expense to Government.

Until the year 1835 the head of a family intending to settle in the country was entitled to one sitio or league of land 4428 acres, on paying the cost of surveying and office fees together with the sum claimed by Government amounting to about one hundred dollars: and a single man was in like manner entitled to a quarter of a league. Six years residence, cultivation and improvement of the soil was requisite to acquire a legal title, by a late law the Government has determined to make no more Grants, until the

PECOS COUNTY HISTORY

VOL. I



Out Yonder
Courtesy of Willie Reed Rowe

Sponsored by
Pecos County Historical Commission
1973 - 1983

Editor
MARSHA LEA DAGGETT, Ph.D.

345,300 acre-feet of water was supplied to crops, and in 1964, 367,500 acre-feet.

PECOS COUNTY HAS SURPRISING NUMBER OF SPRING SYSTEMS

From *Western Chronicles*, Spring-Summer, 1980

by Martin O. Adams

Within the boundaries of Pecos County, as it existed on the date of its creation in 1871, lay numerous natural springs—all situated and existing in a desert environment encompassed within the great Chihuahuan desert.

These natural springs were waterings for wildlife and, in turn, as primitive man arrived, he had both water and a food source. Primitive man coexisted with nature and flourished in the desert environment near the springs.

Early man's requirements were simple, as he required only the basics, such as food, water, and shelter. Although these basic requirements or needs seem elementary to us today, they were a matter of survival to the aborigines who inhabited this vast area of West Texas.

It is common knowledge today that a desert ecological system is a delicate system, but modern man realized this fact too late and today a majority of the springs found in Pecos County in 1871 are now dry and exist only in memory.

Comanche Springs is probably the best known of all Pecos County springs and this system of springs is located within the city of Fort Stockton proper and no additional mention will be made of them because they are well-known to all.

Further down the Comanche Creek system, as it wound its way down the natural channel in a northeasterly direction toward the Pecos River (this channel running roughly between the west

This is the first of a series of calendars from the Rooney Mercantile Company, of Fort Stockton, Texas, 1921. The picture represents the old crossing of Comanche Creek, about 1908, the same crossing as that used by the stages and wagon trains during the Indian days. The wagon and team shown in the picture is a freight outfit. The freighter, having delivered over at the store the goods he has hauled from the railroad, is watering his team in the pool. Our old store is shown in the background to the right. The building just across the ford is the F. W. Young store. The store was built on the site of the Old Silverstein Saloon, which, in the early days, was the loafing place of the Negro soldier, cowboy and outlaw. It was in this building that Lon Neal and Phil Rock, his friend, clasped hands and shot it out over the possession of a Mexican hat.

point of Seven Mile Mesa and Highway 1053) are several springs which contributed to the downflow of Comanche Creek.

The first spring along Comanche Creek is known as **Cold Spring,** located west and a little north of the west point of Seven Mile Mesa.

The next spring down the creek is **San Simon,** also known as **San Pedro Springs.** San Pedro Springs or San Simon Springs is located one and one-half miles southeast of the rock shelter that can be seen from Highway 1053, about ten miles north of Fort Stockton.

Continuing down the creek channel in a northeasterly direction, adjacent to the ruins of Camp Van Camp, a subpost of early Fort Stockton, is **Casa Blanca Springs.** Camp Van Camp is located on level ground above Comanche Creek on its east bank.

The subpost is located on the San Pedro Ranch, now owned by Conoly Brooks. **Casa Blanca Springs** is located on the old Howell Johnson Ranch just north of the division fence between San Pedro Ranch and the Howell Johnson Ranch.

Hart Johnson, local Fort Stockton attorney, says that as a young boy he caught fish on many a morning from the creek fed by Casa Blanca Springs, for his family's breakfast.

About one-quarter of a mile down the creek from Casa Blanca Springs is **Bottle Springs.** Bottle Springs is mentioned in the declaration of A. J. Royal, filed October 9, 1891, indicating his desire to construct an irrigation canal to conduct and transport water, the canal being designated as Casa Blanca Ditch.

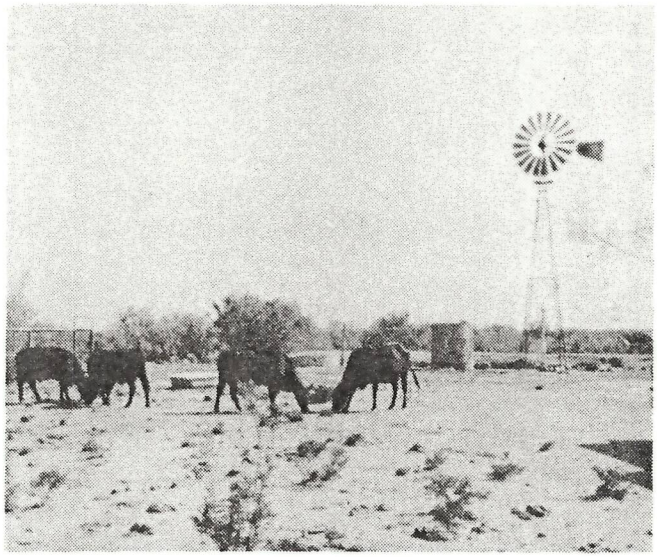
This document is recorded in Volume 1, page 3, of the Irrigation Records of Pecos County, Texas. **Adobe Springs** is located about one mile down creek from Bottle Springs, still on the old Howell Johnson Ranch.

East of Camp Van Camp about five miles on the Hub Parker Ranch, is **Bonita Springs,** which is shown as **Antelope Springs** on General B. H. Grierson's map, copied from the military map of the Rio Grande Frontier, dated 1883.

East of Fort Stockton is a series of three springs known as the upper, middle, and lower **Escondidio Springs,** the creek these springs fed being known by the same name.

The upper spring is located just below the replica of the stage station on IH-10 and assumed the name **Tunas Spring** some time late in the nineteenth century.

Ten miles southwest of Fort Lancaster is **Independence Spring,** also shown as Independence Spring on General Grierson's map. However, on Colton's map of the State of Texas, dated 1872, and A. R. Roessler's map of the State of Texas, dated 1874, Independence Spring apparently is called **Vanderbeck's Spring.**



Drouth of 1983.

Up the Pecos River about three miles from where the existing IH-10 Highway crosses the Pecos River is located **Pecos Springs,** situated on the Olin Smith Ranch.

Twenty miles due south of Independence Spring, this spring is so noted as Meyers Spring on General Grierson's map. However, **Meyers Spring** is not found on either Colton's 1872 map or Roessler's 1874 map. Colton's 1872 map does mention the creek fed by Meyers Spring as **Painted Rock Creek.**

Southeast of Meyers Spring, about thirty-five miles, is found **Martin's Spring** on the Pecos River. Martin's Spring is found on both Colton's map of 1872 and Roessler's map of 1874.

Martin's Spring may be what General Grierson shows on his 1883 map as **Willow Tree Spring.**

Thirty miles south-southeast of Fort Stockton is a spring called **King Spring.** This spring is found on Richardson's map of Texas dated 1859, and on both Colton's and Roessler's mentioned above.

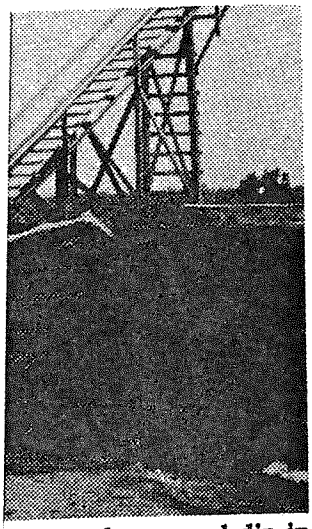
However, this spring does not appear on General Grierson's map. King Spring is probably the spring located on the Park Ranch, southeast of Fort Stockton.

Southwest of Meyers Spring and near Dryden is another spring which bears the name **King Spring.**

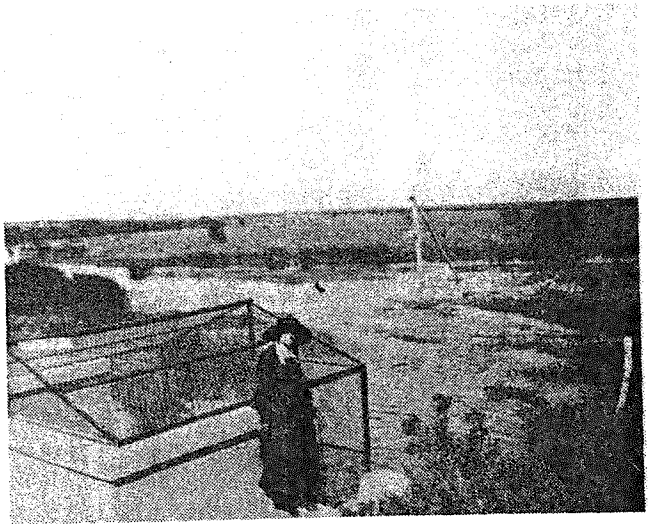
North of Fort Stockton, about nineteen miles, and just west of the Monahans Highway, is **Monument Springs.** This spring is located on the old INK Ranch.

Monument Springs is not noted on Richardson's map of the State of Texas dated 1859, nor on Colton's map of Texas dated 1874.

However, the spring is found on General Grier-



eorge takes a cool dip in



Main spring on Comanche Creek. Mrs. Tom Moore (Myrtle). circa 1914.

ceased. Discharge (ft³/s

WATER YEARS	DIS-CHARGE (ft³/s)
1944	43
1945	43
1946	44
1947	42
1948	37
1949	38
1950	34
1951	27
1952	26
1953	20
1954	26
1955	17
1956	13
1957	4
1958	1.8
1959	0.83
1961	1.5
1962-72	0

ischarge was 66 ft³/s on
ces: Hutson, 1898; Taylor,
Texas Historical Survey

s (CC13). Latitude 30°58′,
n miles northeast of Fort

Stockton. Aquifer: Comanchean limestones of the Edwards-Trinity (Plateau) aquifer. History: The springs were on an old Comanche Indian trail. Mendoza possibly stopped here in 1683. Later they were a stop on the Chihuahua Road. The springs were used for irrigation. Discharge (ft³/s by water years):

WATER YEARS	DIS-CHARGE (ft³/s)	WATER YEARS	DIS-CHARGE (ft³/s)
1902	4.0	1952	2.7
1943	3.8	1953	2.4
1947	4.2	1954	1.8
1948	3.6	1956	1.9
1949	4.9	1957	0.7
1950	4.0	1958	0.2
1951	2.5	1959-71	0

Maximum recorded flow was 6.4 ft³/s on January 18, 1949. Heavy well pumping for irrigation caused the springs to fail.

Cold Springs (CC14). Several springs. Latitude 30°56′, longitude 102°48′, six miles northeast of Fort Stockton. Aquifer: Comanchean limestones of the Edwards-Trinity (Plateau) aquifer. History: The springs were on an old Comanche Indian trail. Later they were used for irrigation. Discharge: October 16, 1942—2.6 ft³/s; April 1958—0; February 22, 1962—0. Heavy well pumping for irrigation caused the springs to fail.

Tunas (Prickly Pear Cactus) or West Escondido Spring (CC15.) Latitude 30°51′, longitude 102°33′, twenty-six miles east of Fort Stockton. Aquifer: Comanchean limestones of the Edwards-Trinity (Plateau) aquifer. History: This was

SPRINGS OF TEXAS

GUNNAR BRUNE

VOLUME I

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kilometers north of Sheffield on the west bank of the Pecos on the H. M. Holmes ranch. It was shown on W. R. Livermore's 1883 *Military map of the Rio Grande frontier*. The cedar trees for which the spring was named still stand, but there is no longer any flow from the alluvial sands. The spring was much used by early settlers in the surrounding area. A well nearby has probably drawn off its water supply. Some writers have placed Cedar Spring in Crockett County.

Twelve kilometers west of Bakersfield on Tunas Creek, were **East Escondido Springs (37)**, on Tom McKenzie's ranch. *Escondido* is Spanish for *hidden*. According to some sources, Indians attempted to hide these springs from travelers. In 1867 Capt. Edward Meyer described them as follows (Duke, 1973):

> fine camping ground on south side of road near the first permanent water of which there is a very large pool or lake at the base of a prominent mountain 50 yards south of Road, water clear, but has a strong vegetable taste, grazing excellent—wood very scarce.

A stage stand once stood here. The springs emerged from gravel into a deep pool which was walled in with a concrete weir at the lower end. A flow of 1.6 lps was observed in 1943. Soon After, the springs failed, and the hole is now largely filled with sediment. A grove of large cottonwoods still stands at the site, and wild turkeys frequent the environs. The water level in nearby wells is now about 10 meters below the surface.

Eight kilometers west were **Middle Escondido Springs (38)**, which flowed from Comanchean limestones on the south side of Tunas Creek on the Nutt Ranch. They also were a convenient stop for travelers on the Old Spanish Trail. In 1857 the Leach wagon train called them **Agua Escondido** or Hidden Water. In 1943 they discharged 2.8 lps, but they dried up soon after.

Four kilometers farther west and thirty-two east of Fort Stockton on Interstate 10 is a restored stagecoach station and historical marker. Five hundred meters south of the station were **Tunas Springs (39)**, named for the prickly pears which are common here. U.S. Army units called them **Pears Springs**. They were also known as **West Escondido (West Hidden) Springs**. The scarlet-flowered cactus, Echinocereus lloydii, has been found in Texas only on the moist rocks of the bluff above these springs. With the drying up of the springs and also because of depredations by plant-knappers, the species is now presumed to be extinct in the state. The springs were well described by Whiting in 1849 (Whiting and others, 1938) as follows:

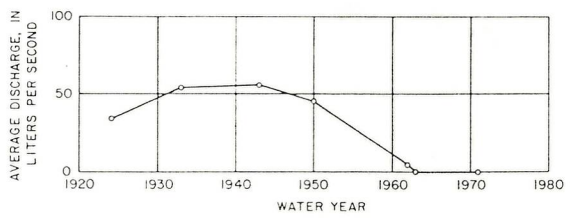
> We stopped to dine hard by some excellent grass, while down in the valley below water was found in abundance. In the afternoon after passing a small thicket of hackberry we came upon a clear and beautiful spring gushing from the Limestone bluff on the N side of the valley. This is the Escondido. Here we found the grass, which had been burned off when we passed up the Pecos, green and luxuriant. . . .

Tunas Springs' water once ran a short distance and then formed a pond about 15 meters long and 3 wide. The springs were a favorite campground of Paleo-Indians, Lipan Apaches, and Comanches. On the rocky hill to the north of the springs are many flint chips, burned-rock middens, and bedrock mortars. As was usually the case, the Comanches hotly contested the white man's taking these beautiful springs from them, and numerous early travelers were killed here.

The springs flowed from Comanchean limestone at the base of the bluff. A sulfur odor was noted by some early travelers, but the water was of relatively high quality. The trace of the Old Spanish Trail may still be seen. The adjacent floodplain is irrigated with groundwater. Irrigation pumping is the most likely reason that the springs failed in 1963. Discharge records are shown on the accompanying graph.

King Springs (36) were 16 kilometers south of Tunas Springs on Dwaine Moore's ranch, at latitude 30°42′ and longitude 102°33′. They trickled from a bluff of lower Cretaceous limestone in which there is a shelter with pictographs. Burned-rock middens nearby also testify that a prehistoric people lived at the springs. W. H. Emory, surveying for the United States and Mexico boundary in 1857, noted that King Springs were 50 miles due west of Pecos Springs, and wrote:

> This is a large spring of water, deep and clear, with a fine gravel-bottom, and well protected from the sun by shelving rocks, but without a bush or tree to mark its place.



Discharge of Tunas Springs.

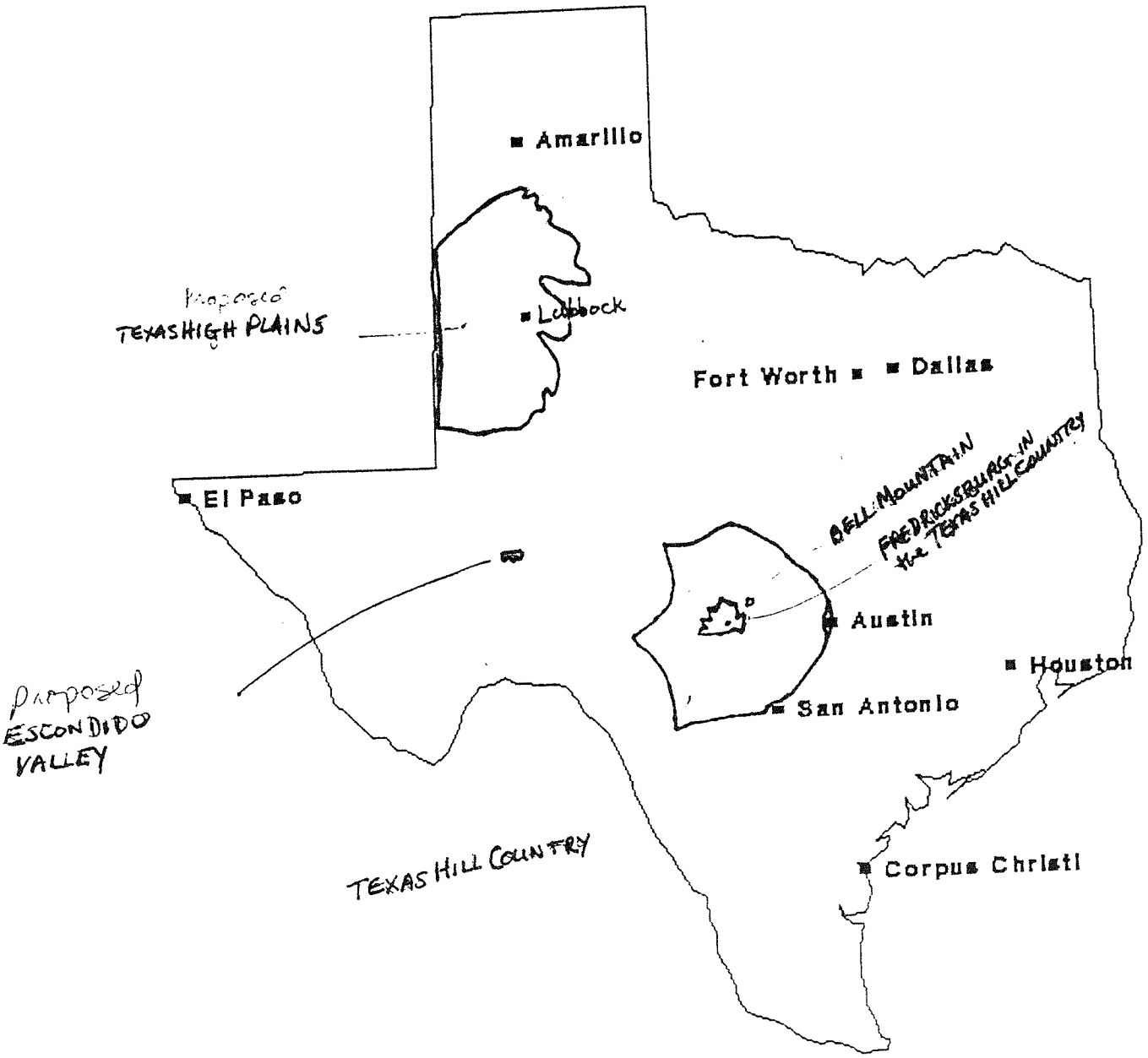

Amarillo
Proposed
TEXAS HIGH PLAINS
Lubbock
Fort Worth
Dallas
El Paso
BELL MOUNTAIN
FREDRICKSBURG IN
THE TEXAS HILL COUNTRY
Austin
Houston
San Antonio
Proposed
ESCONDIDO
VALLEY
TEXAS HILL COUNTRY
Corpus Christi

Exhibit VI – Photo of Stagecoach Stop

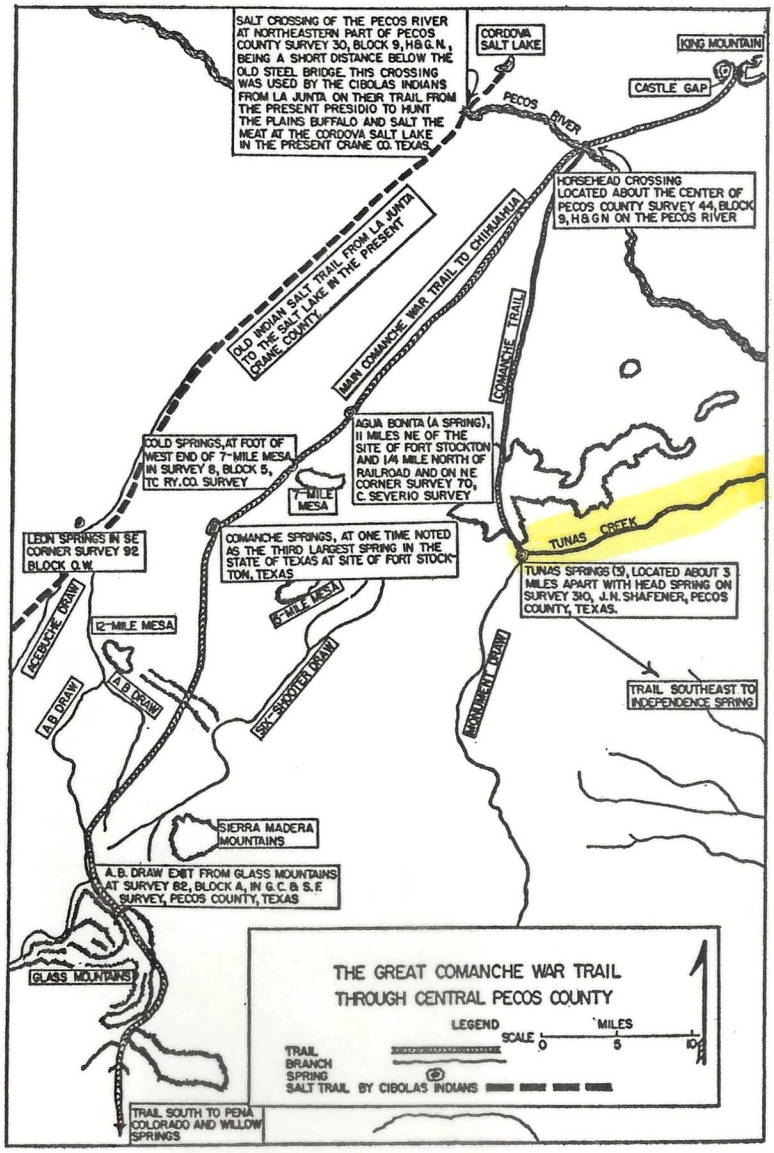
Never Again

Texas B. C. - 1821

Volume 1

by CLAYTON WILLIAMS

The Naylor Company
Book Publishers of the Southwest
San Antonio, Texas


SALT CROSSING OF THE PECOS RIVER AT NORTHEASTERN PART OF PECOS COUNTY SURVEY 30, BLOCK 9, H&G.N., BEING A SHORT DISTANCE BELOW THE OLD STEEL BRIDGE. THIS CROSSING WAS USED BY THE CIBOLAS INDIANS FROM LA JUNTA ON THEIR TRAIL FROM THE PRESENT PRESIDIO TO HUNT THE PLAINS BUFFALO AND SALT THE MEAT AT THE CORDOVA SALT LAKE IN THE PRESENT CRANE CO. TEXAS.
CORDOVA SALT LAKE
KING MOUNTAIN
CASTLE GAP
PECOS RIVER
HORSEHEAD CROSSING LOCATED ABOUT THE CENTER OF PECOS COUNTY SURVEY 44, BLOCK 9, H&GN ON THE PECOS RIVER
OLD INDIAN SALT TRAIL FROM LA JUNTA TO THE SALT LAKE IN THE PRESENT CRANE COUNTY
MAIN COMANCHE WAR TRAIL TO CHIHUAHUA
COMANCHE TRAIL
COLD SPRINGS, AT FOOT OF WEST END OF 7-MILE MESA IN SURVEY 8, BLOCK 5, TC RY. CO. SURVEY
AGUA BONITA (A SPRING), 11 MILES NE OF THE SITE OF FORT STOCKTON AND 1/4 MILE NORTH OF RAILROAD AND ON N.E. CORNER SURVEY 70, C. SEVERIO SURVEY
7-MILE MESA
TUNAS CREEK
LEON SPRINGS IN SE CORNER SURVEY 92 BLOCK O.W.
COMANCHE SPRINGS, AT ONE TIME NOTED AS THE THIRD LARGEST SPRING IN THE STATE OF TEXAS AT SITE OF FORT STOCKTON, TEXAS
TUNAS SPRINGS (3), LOCATED ABOUT 3 MILES APART WITH HEAD SPRING ON SURVEY 310, J.N. SHAFENER, PECOS COUNTY, TEXAS.
ACEBUCHE DRAW
12-MILE MESA
5-MILE MESA
A.B. DRAW
A.B. DRAW
SSC SCHOOTEN DRAW
MONUMENT DRAW
TRAIL SOUTHEAST TO INDEPENDENCE SPRING
SIERRA MADERA MOUNTAINS
A.B. DRAW EXIT FROM GLASS MOUNTAINS AT SURVEY 82, BLOCK A, IN G.C. & S.F. SURVEY, PECOS COUNTY, TEXAS
GLASS MOUNTAINS
THE GREAT COMANCHE WAR TRAIL
THROUGH CENTRAL PECOS COUNTY
LEGEND
SCALE
MILES
0
5
10
TRAIL
BRANCH
SPRING
SALT TRAIL BY CIBOLAS INDIANS
TRAIL SOUTH TO PENA COLORADO AND WILLOW SPRINGS

from which they could obtain additional food from the acorns of the shinnery. Just as the quicksand and abrupt, steap bank of the crooked, snake-like Pecos resisted any crossing, that long heavy one hundred-mile stretch of sand dunes, parallel to the Pecos, created a barrier to man or beast, on the west side of the Llano Estacado.

Upon crossing through the rough pass in Castle Gap they viewed the desolate, tree-barren regions of the Pecos River. At Horsehead Crossing, they camped, quenched their thirst, watered their animals, and prepared a supply of jerky from the horse herd for food to supply them on those long, hard and parching rides across the salt grass bumps to the few and hidden springs in the mesas of the Edwards Plateau and mountainous, basalt regions of the Rio Grande. While traversing the mesa country west of the Pecos, they saw principally the creosote bush and cacti, but also the Spanish oak, cedar, mesquite, hackberry and live oak trees along with the gramma, needle, buffalo, running and curly mesquite grasses. Prominent among the plants were the Indian paintbrush, the blue and red verbenas, bush honeysuckle, red bud, Mexican buckeye and persimmon, mountain laurel, juniper, piñon, wild cherry, and buttercups. They found those buckskin leggings useful in protecting them from thorns and the prickly spikes of the catclaw, mesquite, prickly pear, cholla, allthorn, lechuguilla, and the tasajillo.

If they had proceeded by Pecos Spring, Independence and Myers Springs, they would have encountered the plum. By going through the regions of the Big Bend, they might have climbed the heights of the Chisos Mountains among the maple, western yellow pine, quaking asp and black thorn to visit the only native Douglas spruce and Arizona ash in Texas. Should they have ventured into the Davis Mountains, they would have seen the mountain live oak and western yellow pine.

The salt grass and "Chamizal" of the Pecos Valley were seeding and full of nourishment. At the watering places were found the metates and pestles for grinding the seeds and grasses for food. Permanent springs and streams of

Never Again

Texas 1848 - 1861

Volume 3

by CLAYTON WILLIAMS

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in the form of life pension and the rank of brevet-colonel from the government. Three years later, a soldier's diary pictures her as the modest and womanly Doctor Mary, alias "The Great Western," over seven feet tall, dressed in a crimson velvet waist, pretty riding skirt, gold laced cap of the Second Artillery, and carrying pistols and a rifle. The large scar across the Great Western's cheek was reportedly gotten in combat with a Mexican soldier while she tended cannon in the siege of Matamoros. She reminded the soldier of Joan of Arc and the days of chivalry.[8]

Regardless of the Great Western, Whiting had a job to do. Lieutenant Sackett and Captain Skillman arrived with the needed supplies. Skillman and Spencer were sent down the Rio Grande to Leaton's to pick up Whiting's important papers, baggage, and some fine government animals, with instructions to join Whiting's party on the Pecos River. With the benefit of their prior observations, and upon obtaining additional information for their route back, Whiting's group went down the river to the future site of Fort Quitman, passed through a mountain gap to Eagle Spring, found deserted Indian camps and cattle, and then moved southeast to Prairie and Barrel Springs. Whiting applied the name Cathedral to that peak southeast of the present Marfa. Gómez Peak in the Davis Mountains unduly honors the Apache plunderer.

Once within the Davis Mountains, Whiting knew his route. In finding tracks of shod horses, they surmised that another party of Americans had passed through there behind them. These tracks were probably those of the Glanton party. According to Colonel M. L. Crimmins, Glanton killed a Mexican in the interior of Mexico in 1846, was ordered under arrest, and followed General Lane's recommendation to "light a shuck" for San Antonio. In San Antonio, he was mixed up in some unwarranted shooting at a Presbyterian preacher. Following which, he got the Brown brothers and others to join him, and "lighted another

shuck" for California, by way of West Texas, Leaton's fort and Chihuahua, deserting his wife and infant daughter.

Glanton later committed atrocities against such friendly Apaches as Cigarito and his tribesmen, in collecting their scalps to deliver to the Chihuahua authorities, at a price of $50 to $500 each. Sometimes the victims were the unprotected Mexican peons and ranchers, whose scalps were treated and trimmed up in the true Apache fashion to pass inspection as genuine articles for the same price.[9]

By May 5th, Whiting's men reached the Awache (Comanche Springs); rode on below the Iron Hill (7 Mile Mesa); and, after ascending the divide beyond the Altar, a hill a short distance east of Awache, unexpectedly came upon a clear beautiful spring (Tunas) gushing from the limestone bluff on the north side of the valley. While they were riding down Tunas Valley on the next day, Capote and his 30 Lipan Indians galloped up to them. To the Lipans, the Tunas Springs were known as Clear Water. After some talk, each party went its way; Whiting's force headed down the draw to the Pecos River, and arrived at the log crossing by May 8. As Skillman had not caught up with him, Whiting waited until the ninth and then left a note for him. After Whiting's party had ridden down the river 16 miles and camped, Skillman's group, with baggage, provisions, and animals, joined them. Skillman brought word that Gómez, having failed in his actions against Whiting's small party and being fearful of revenge from the United States, had gone down to Leaton's and made a treaty with him.[10]

After crossing the Pecos River at a pretty grove on an abrupt bend of the river at two cliffs, and riding on over to the Devil's River, they were again short on food. Skillman borrowed Policarpo's favorite mule and, with two other men, pushed forward for supplies. Indians stole Policarpo's mule along with the other mounts of Skillman's party, forcing the detail to walk into Fort Inge. This fort, on the

French's large crew, with a wagon train drawn by 300 animals, started on their return trip in their survey of the Neighbors trail. They came by Hueco Tanks, reporting that the water was supplied by run-off rain water, and the passage steep and difficult. At Ojo de los Alamos they noted the scanty water supply and the small holes dug in the granite hillside by the emigrants. Nine miles east was Thorn's Spring with abundant water from a cave. By winding up a steep ravine to its head, they came to two springs in a forest of pines at the foot of the Guadalupe.[40]

In striking the Delaware Creek, little mention was made of it. But the 125 miles down the Pecos River was emphatically mentioned: "But few places can be found more lonely or that present a more dreary appearance, than all this region of the Pecos. Naught that is pleasing meets the eye . . . no sound falls on the ear. Here solitude reigns supreme, wrapt in the eternal silence of ages past, a silence perchance unbroken from the beginning, save by the cackle of the wild fowl or the midnight howl of the wolf. Civilization in its strength has not been here, and the only signs of life or moving thing is now and then a single deer, a few antelope, a flock of ducks circling over the lagoons, or a solitary crane winging its way up stream. Not a tree can be found under which the traveler can rest protected from the intense sun's rays in summer, nor can wood be found to warm him in winter."[41] Regardless of the difficulties, the wild rush west continued.

At San Elizario, on the 15th of September, Companies I and K of the 3rd Infantry dropped out of the line of march and set up their camps to be available to provide some protection for the area, and to be of aid to the emigrants and supply trains. Arrangements had been made to reoccupy old Fort Bliss on September 8. Companies A, B, C, D and E of the 3rd Infantry, under the command of Brevet Major Jefferson Van Horne, had settled down in this place on September 14.

In the meantime, on the emigrants' trail out of Coons and on the San Diego Crossing of the Rio Grande, close to

Doña Ana, New Mexico, Company H of the 1st Dragoons had an engagement with Indians on August 15.[42] In the settlements along the lower Rio Grande, during several months, 1,350 horses were stolen and 36 people were killed, captured or wounded.[43]

Naturally, the Indians did not attack forts or large and protected trains. Instead, they attacked less protected settlements and wagon trains. The Florez ranch near Zaragoza in Coahuila, Mexico, reported the loss on July 11, 1849, of 1,842 mares, 739 mules, 75 gentle mules, 168 good quality horses, and 230 unbroken horses. Aguirre of El Rosario claimed the loss on July 25, 1849, of 55 mules.[44]

In the stream of creeping caravans across West Texas, sometimes there were small parties which fell prey to Indian attacks, such as four men who were surrounded at Escondido (Tunas) by 100 Indians. After defending themselves for several days behind a small rock barricade at the head of the spring, they were finally all killed by the Indians. Near Emigrants' Crossing on the Pecos River, the remains of burned wagons and a grave containing eight bodies were found. Perhaps soldiers or men of another wagon train came across and buried these corpses. In the region of the present Bakersfield on the Pecos River, the remains of an old wagon train along with some cap and ball pistols were found. At China Ponds in Escondido Draw, and north of the capped peak that Highway 290 heads directly toward, were found the remains of a huge mummified body holding the skeleton of a baby.[45]

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1 *Ford Memoirs,* p. 508, Typescript, Archives, University of Texas; Hays to Bell, *Northern Standard,* February 10, 1849; Webb, et al., *The Handbook of Texas,* as cited; Neighbours, Kenneth F. (ed.), "The Report of the Expedition of Major Robert S. Neighbors to El Paso in 1849," *Southwestern Historical Quarterly,* Vol. LX, April, 1957, No. 4, p. 528.

2 *Ford Memoirs,* as cited, p. 504; Neighbours, Kenneth F., as cited, p. 528.

3 Neighbours, Kenneth, F., as cited, p. 528.

4 *Ford Memoirs,* as cited, p. 511.

5 *Ibid.*

Exhibit IX - Mary Kay Shannon's Letter

FORT STOCKTON HISTORICAL SOCIETY
FORT STOCKTON, TEXAS 79735

January 10, 1990

Joe Flynn
1437 Dorris Street
Hurst, Texas 76053

Dear Joe,

J. T. Baker, my great-grandfather, with G. Rollie White established the White-Baker Ranch in eastern Pecos County in 1911. The original ranch headquarters were at the present intersection of I.H. 10 and U.S. Hwy 190. In 1923 the headquarters were moved to the present location seven miles west of Bakersfield.

The main house sits atop a low hill overlooking Escondido Valley. The house is 100 yards north of Escondido Creek and approximately 150 yards from the Lower Escondido Springs. 200 yards past the Spring to the south are the ruins of the Escondido Stage Stop on the Overland Mail Route.

Part of our ranch is leased from the University of Texas Lands System. Approximately 250 acres from the south-west corner of our lease were transfered to what would become the Ste. Genevieve Vineyards. The vineyard is two miles south west of our ranch house in Escondido Valley.

As a fourth generation Pecos County resident, as a historian, and as director/curator of the Annie Riggs Museum, I have done extensive research on this area. Escondido is the historical name for the springs and creek as well as the draw or valley now known as Tunas. In essesance Tunas and Escondido are synonymous.

I hope this clarifies any confusion or questions you may have regarding various names of this area. If I can be of any further assitance, please do not hesitate to contact me.

Sincerely,

Mary Kay Shannon

Mary Kay Shannon
Director/Curator

ANNIE RIGGS MEMORIAL MUSEUM
(915) 336 - 2167

301 S. MAIN
FORT STOCKTON, TEXAS 79735

SPRINGS OF TEXAS

GUNNAR BRUNE

VOLUME I

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Fort Worth, Texas 76101

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Twelve kilometers west of Bakersfield on Tunas Creek, were **East Escondido Springs (37)**, on Tom McKenzie's ranch. *Escondido* is Spanish for *hidden*. According to some sources, Indians attempted to hide these springs from travelers. In 1867 Capt. Edward Meyer described them as follows (Duke, 1973):

> fine camping ground on south side of road near the first permanent water of which there is a very large pool or lake at the base of a prominent mountain 50 yards south of Road, water clear, but has a strong vegetable taste, grazing excellent—wood very scarce.

A stage stand once stood here. The springs emerged from gravel into a deep pool which was walled in with a concrete weir at the lower end. A flow of 1.6 lps was observed in 1943. Soon After, the springs failed, and the hole is now largely filled with sediment. A grove of large cottonwoods still stands at the site, and wild turkeys frequent the environs. The water level in nearby wells is now about 10 meters below the surface.

Eight kilometers west were **Middle Escondido Springs (38)**, which flowed from Comanchean limestones on the south side of Tunas Creek on the Nutt Ranch. They also were a convenient stop for travelers on the Old Spanish Trail. In 1857 the Leach wagon train called them **Agua Escondido** or Hidden Water. In 1943 they discharged 2.8 lps, but they dried up soon after.

Four kilometers farther west and thirty-two east of Fort Stockton on Interstate 10 is a restored stagecoach station and historical marker. Five hundred meters south of the station were **Tunas Springs (39)**, named for the prickly pears which are common here. U.S. Army units called them **Pears Springs**. They were also known as **West Escondido (West Hidden) Springs**. The scarlet-flowered cactus, Echinocereus lloydii, has been found in Texas only on the moist rocks of the bluff above these springs. With the drying up of the springs and also because of depredations by plant-knappers, the species is now presumed to be extinct in the state. The springs were well described by Whiting in 1849 (Whiting and others, 1938) as follows:

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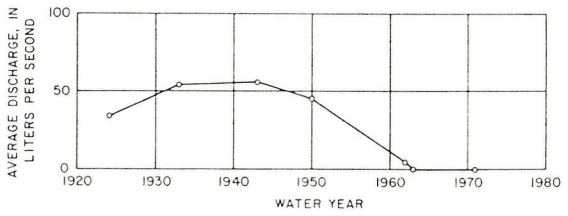

Discharge of Tunas Springs.

Exhibit XI - Sharps Rifles and Spanish Mules

SHARPS RIFLES AND SPANISH MULES

THE SAN ANTONIO-EL PASO MAIL, 1851-1864

VOLUME I

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The Department of History

by
Wayne Randolph Austerman
B.A., Louisiana State University, 1971
M.A., Louisiana State University, 1977
December, 1981

Skillman may have had a guarded encounter with the tribesmen while halted at the watering place, for he later mentioned having met several bands on the route, and stated that "their object seemed to be the robbery of parties bound for California." They offered no threat to his caravan at that point. [29]

Leaving the gushing springs behind, the plainsmen rode on across a landscape that grew increasingly arid and dotted with soaring, turreted mesas. The road led down a long draw in the lowlands between the brooding heights, and followed the dry bed of an intermittent stream to Upper Escondido Springs, a rock-rimmed pool in a bright splash of greenery that "lay at the foot of a mountainous pile of volcanic rock." [30]

Like Comanche Springs, it was a place of lethal meetings. Nearby were the pitiful remains of a small rock breastwork that had been hastily thrown up by the members of an emigrant party several years before. The Comanches had not honored them with graves. Skillman paused only long enough to change teams and then drove on as the distance narrowed to the Pecos. Just shy of four miles farther on he passed the small middle spring of the Escondido, and spurred on for six miles to Lower Escondido Springs. Antelope and small desert deer bounded from beneath the oaks as the coaches

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[29] New Orleans Daily Picayune, July 27, 1853, citing the Galveston News, n.d.; U.S.G.S. Map Sheet, Fort Stockton East 1970.

[30] George G. Smith, The Life and Times of George Foster Pierce (Sparta, Georgia: Hancock Publishing Company, 1888), 388. Pierce traveled the route on a stage in 1858-59 and left a good description of the country.

wheeled into the welcoming shade.[31]

The expressmen probably celebrated Independence Day on the Lower Escondido. Fresh venison and a cup of something stronger than water might have marked the occasion. They were still 369 miles from their destination, and a week of hard travel lay ahead, but the coaches were sound and neither a man nor a mule had been claimed by the Indians.

The sky was barely growing light as the drivers swung their teams up the road to the northeast from the springs the next morning. The men watched while the caprock-nippled thrust of Squawteat Peak grew on the horizon to their right, silhouetted against the glow of the dawn. It was twenty-three miles to the west bank of the Pecos, and the rocky track cut through the thin-leafed haze of thorn in the bottoms, weaving between the sugarloaf hills and wind-scoured mesas that shimmered in the ghost-dance of the empty heat as the sun climbed higher.[32]

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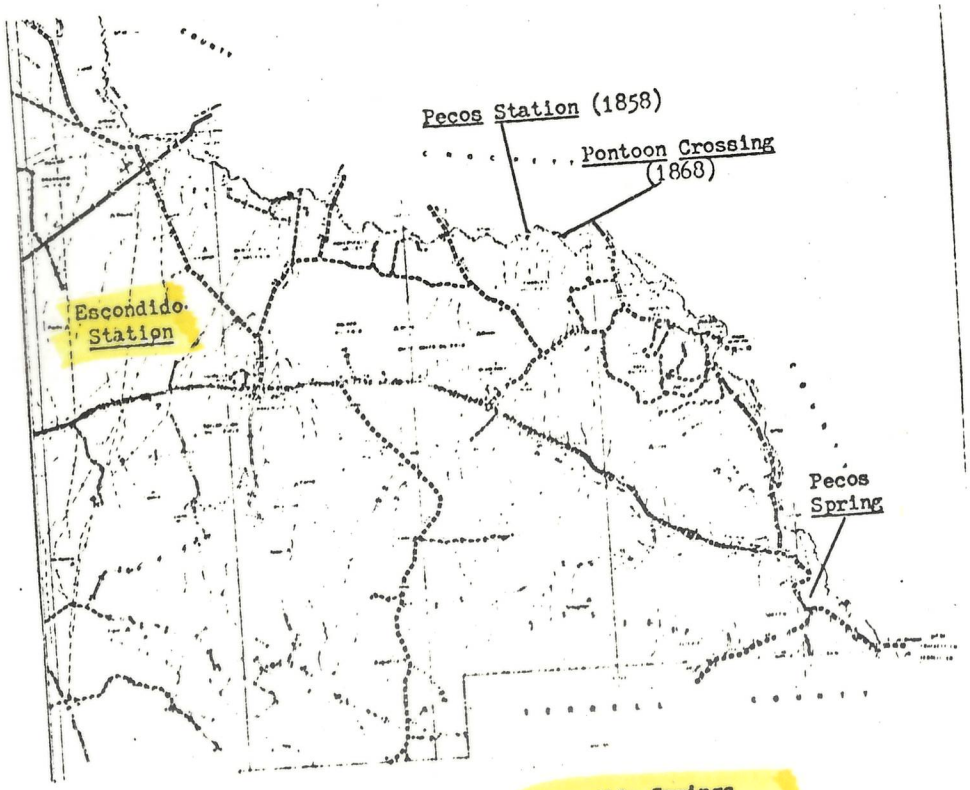
[31]Haley, "Log," 222; "To California Through Texas and Mexico The Diary and Letters of Thomas B. Eastland and Joseph G. Eastland, His Son," ed. Douglas S. Watson, California Historical Quarterly, XVIII, No. 2 (June, 1939), 115, 135. This article comprises one of the more detailed accounts of the emigrant trail through this region.

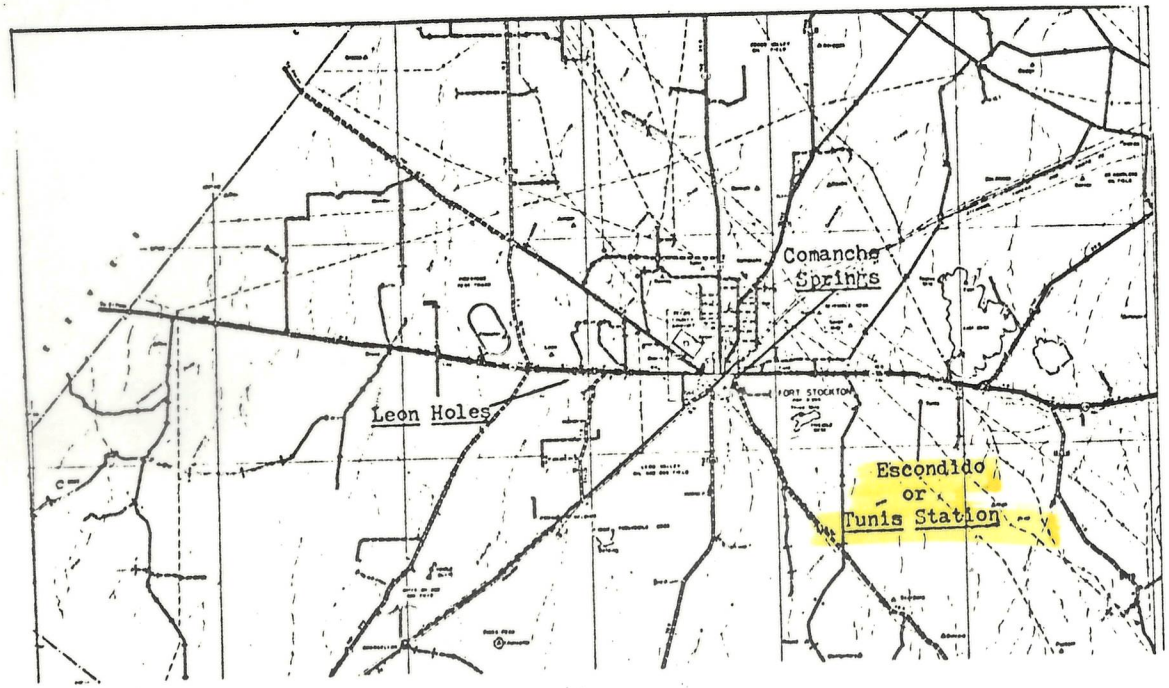
[32]Lieutenant Colonel Thomas B. Hunt, "Journal Showing the Route Taken by the Government Train Accompanying the 15th Regiment, U.S. Infantry from Austin, Tex. to Ft. Craig, N.M. and Returning to San Antonio July-December, 1869," (Record Group 77, National Archives and Records Service), 27-28. Hereafter references of this type will use the abbreviation of "RG___, NARS."

Lower Escondido Spring

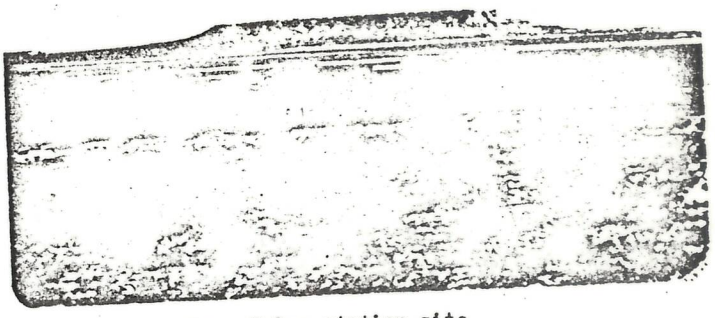
On the trail between the Pecos and Escondido Springs
View to the east



Pecos Spring to Escondido Springs



Comanche Springs and Leon Holes



Leon Holes station site

Overgrown rock ruins mark the station site at East Escondido Springs

east found him and sent to Fort Buchanan for a doctor. Nine days after St. John had been wounded the arm was amputated. By that time the gash was swarming with maggots, but the tough New Yorker survived. Within a few weeks he was able to mount a horse again. George Giddings and Isaiah Woods had lost a good man when St. John went to work for Butterfield.[22]

Despite the trouble at Dragoon Wells the Butterfield coaches rolled across the desert on that first trip and reached their destinations well ahead of time. President James Buchanan sent the company a personal message of congratulations and predicted that it was the vanguard of a new period of progress for the nation. George Giddings' pioneering transcontinental operation remained a poor relation to the Post Office Department as Butterfield's better financed and heavily promoted company made itself synonymous with the idea of overland stage travel in the Southwest.[23]

While Giddings was shuttling back and forth between New York and Washington in a desperate bid to acquire enough money to stay in business his new stations furnished amusement for the Indians. They had waited until the Escondido Springs stopping place was only a few months old before making a courtesy call one night that left the station and forty tons of new-cut hay blazing in the darkness. The raid came hard upon another one a few nights before at Fort

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[22] Ibid., 2:370-71; San Antonio Daily Herald, October 8, 1858.

[23] Hafen, Overland Mail, 94-95; Sacramento Union, October 14, 1858; New York Herald, November 19, 1858.

Lancaster. Giddings decided to abandon the Escondido site and made plans to build another station to the northeast at a point near where the road veered west from the Pecos. It would be a risky move as well, but the run from Fort Lancaster to Comanche Springs was too long and punishing on the teams to leave them without a halting place.[24]

The company's employees had learned to take such things as Indian raids in their stride, and the loss of stock and stations had by then become something that was looked upon simply as part of the risks that came with the job. Certainly traffic on the route did not slacken at all. The San Diego mail arrived in San Antonio on the morning of October 21 with Captain Holliday at the reins and several passengers from Arizona aboard. They reported meeting frovers on the trail who were herding from eight to ten thousand cattle to the California markets.[25]

Another traveler arrived with the El Paso stage early in December, and while he voiced warm approval of the line's operations, he and his companion were ironic symbols of the issue that was already pulling the mail companies into the sectional tug-of-war between North and South. Solomon C. Childers spoke "in the highest terms of the San Antonio and San Diego Mail Line---the stages being comfortable, the drivers accommodating and the conductors a capital set, particularly our friends, Frank and Thomas." The Daily Herald noted also

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[24]Burnham deposition, Giddings vs. the United States.

[25]San Antonio Daily Herald, October 23, 1858.

Despite heat, dirt, and indigestion, Pierce found much to interest him along the trail. He judged the Devil's River to be "lovely, grand, enchanting . . . sublime, thrilling, religious." West of Howard's Well he found the country flanking the Pecos less inspiring. "The views are panoramic---perpetually shifting---yet always desolate. We have here uniformity of change---a monotony of variety---hill, mountain, vale, cave, gorge, canon, precipice---all alike in loneliness and sterility---the very nakedness of ruin." [48]

The clergyman was relieved when they reached Fort Lancaster on the 26th after making "the most frightful descent upon the whole route. The road has been cut out of the mountainside, and runs along upon the brink of a precipice of awful depth. To go down in safety requires all the help and precautions for such cases made and provided." It was 104° by the surgeon's thermometer at the post, and the travelers felt the heat painfully. "The wind, confined by the mountains, was pouring like a torrent through the vale; and yet, in passing over deserts of sand and rock, had become so dry and hot as hardly to affect the temperature at all." Pierce should have been thankful not to have stopped at Lancaster in the winter. [49]

The next day they reached the ruined station at Escondido Springs, and the parched minister knelt by the rocky mouth of the flow to take a drink, but found first that he had "to settle a serious controver-

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[48] Ibid., 385-86. Pierce did not mention any stations on the road besides those at the army posts. Some of them had already been destroyed. Others must have been in operation, but he neglected to mention them.

[49] Ibid., 387-88.

CHAPTER XI

The Flame and the Talons

Sometime in early January, 1860, the El Paso mail coach thundered into the station at Comanche Springs and rocked to a halt with the mules wheezing and blowing in the frosty air. Steam rose in pungent clouds from their sweating backs while their chill breath spurted in wraiths before them like welcoming ghosts. A few of them groaned and nickered impatiently, waiting to be unhitched, rubbed down, and fed. There were no answering brays from the corral. The Kiowas and Comanches had struck a few days before and driven the stock away from under the very nose of the nearby fort's garrison. [1]

It was a fitting beginning for the year to come. George Giddings had kept his men and coaches on the road throughout that winter, never relaxing in his efforts to keep the mail, passengers, and contract safe from the Indians and Joseph Holt. As the months ahead would prove, fortune and politics often conspired to reward heroic efforts with little but tragic results.

In San Antonio Giddings instructed his employees and tried to set affairs in order before departing on another trip to Washington for what he anticipated would be another painful interview with the

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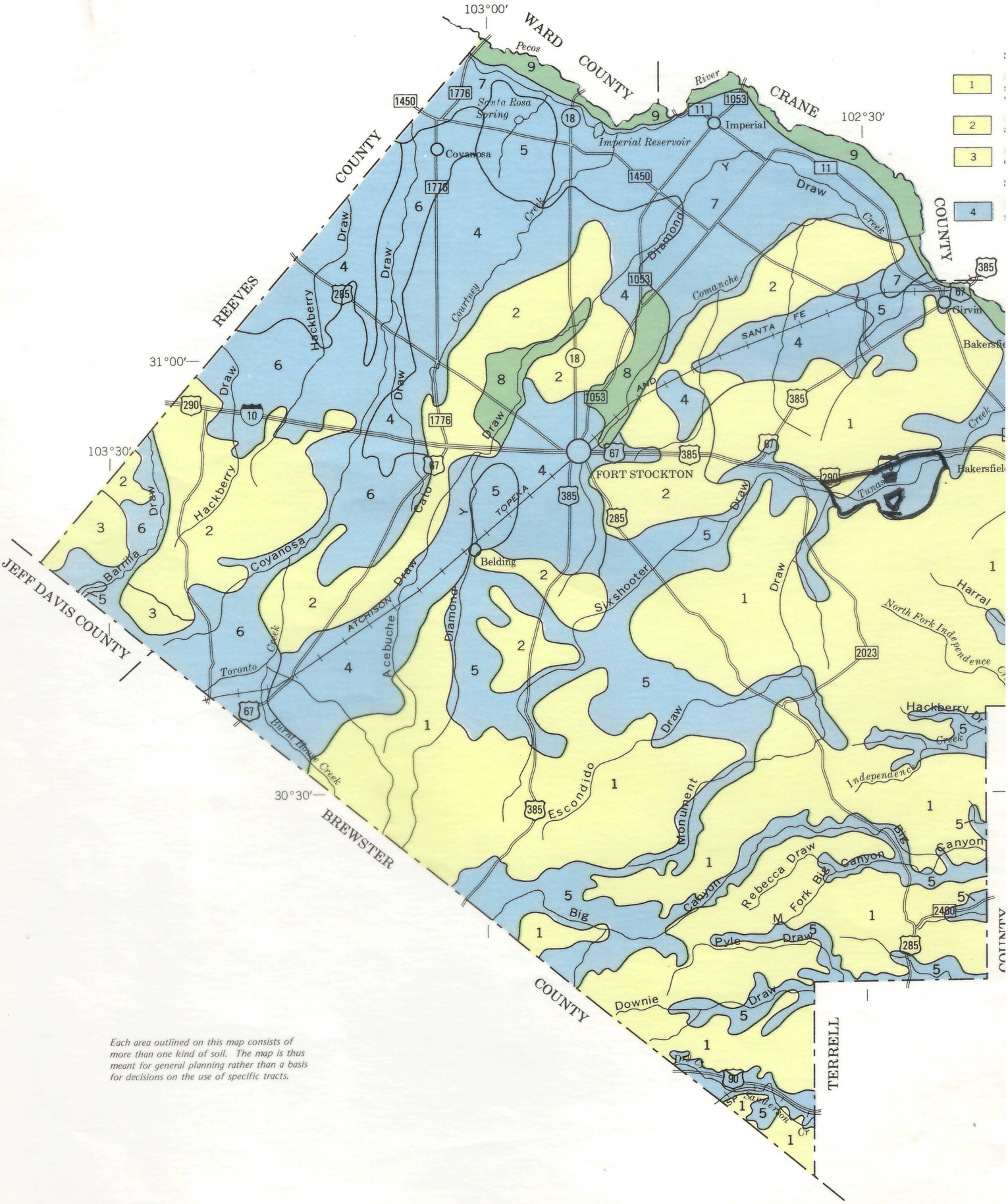
[1] Deposition of George H. Giddings, George H. Giddings vs. the United States, Kiowa, Comanche, and Apache Indians (Indian Depredation No. 3873) United States Court of Claims, December Term, 1891.



Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

LEGEND

DOMINANTLY ON HILLS AND MOUNTAINS

anderson-Rock outcrop: Very shallow to shallow and deep, gently to steep gravelly soils; and rock outcrop; on limestone hills and in

Rock outcrop: Very shallow to shallow, rolling to steep very gravelly ıny soils; and rock outcrop; on limestone hills

ɛr-Limpia: Very shallow to shallow and deep, undulating to steep very soils; on igneous hills and mountains

DOMINANTLY ON UPLANDS

-Upton-Delnorte: Deep and very shallow to shallow, nearly level to undulating very gravelly and loamy soils; on uplands

5 Reagan-Hodgins-Iraan: Deep, nearly level loamy soils; on uplands and flood plains

6 Dalby-Reakor: Deep, nearly level clayey and loamy soils; on uplands and outwash plains

7 Monahans-Orla-Hoban: Deep and shallow, nearly level loamy soils; on uplands

SOILS DOMINANTLY ON FLOOD PLAINS

8 Balmorhea-Reeves: Deep and moderately deep, nearly level loamy soils; on flood plains and uplands

9 Pecos-Patrole-Arno: Deep, nearly level, saline clayey and loamy soils; on flood plains of the Pecos River

Compiled 1979

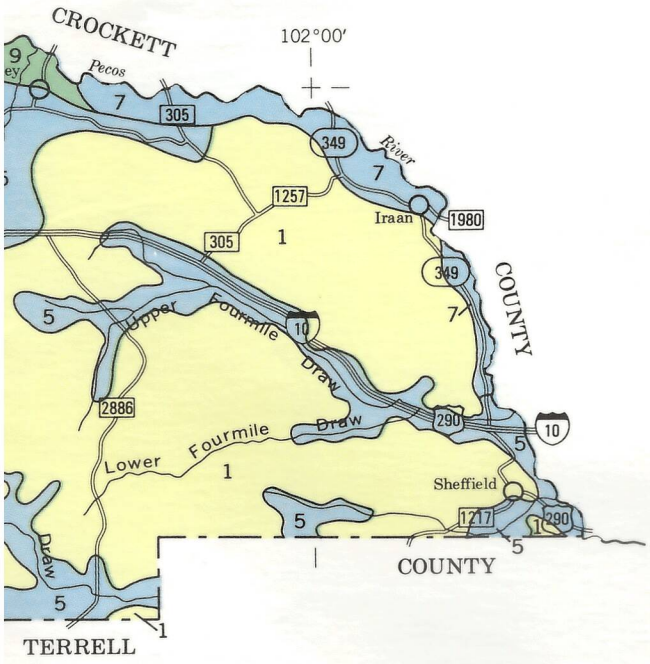


Exhibit XII – Colored Soil Map

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
TEXAS AGRICULTURAL EXPERIMENT STATION

GENERAL SOIL MAP

PECOS COUNTY, TEXAS

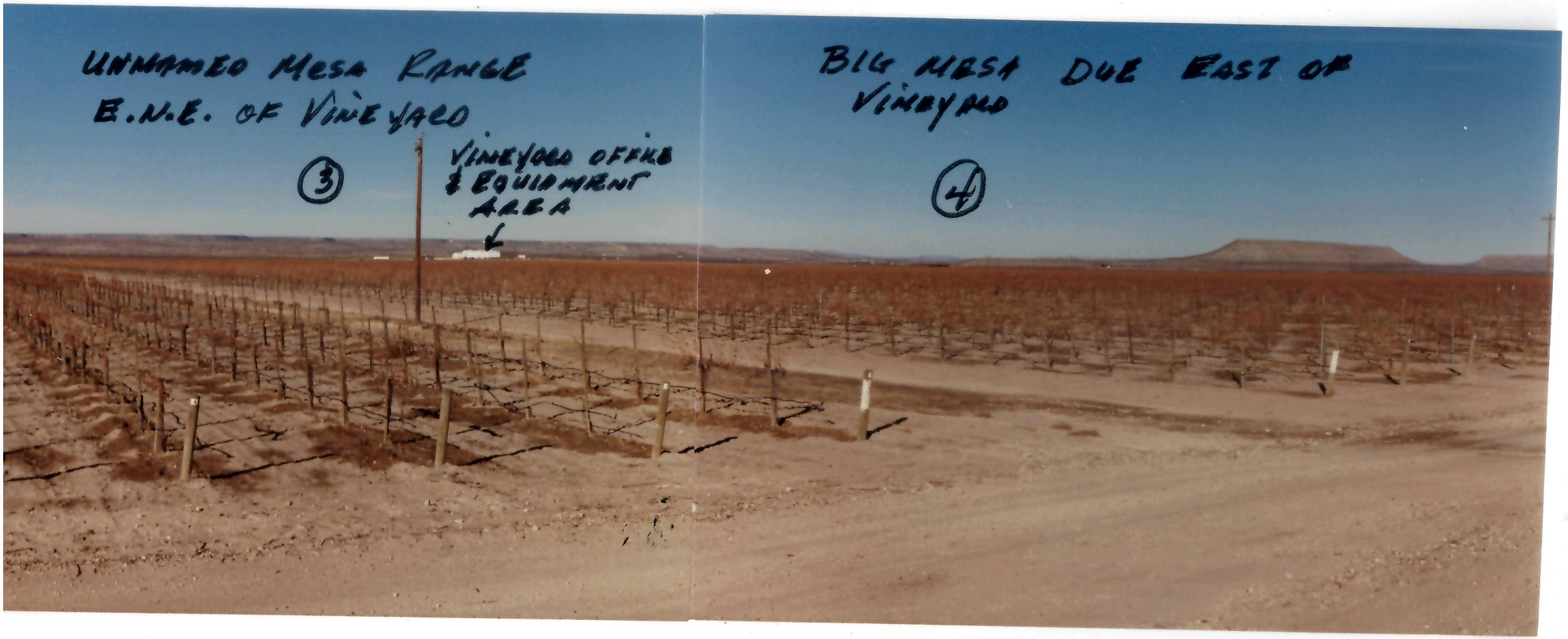
N

Scale 1:633,600

2 0 2 4 6 8 10 Miles

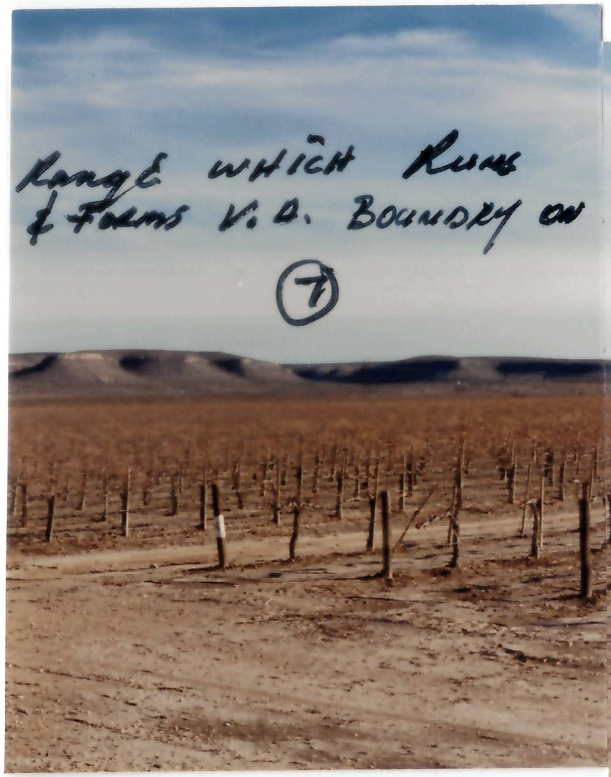
2 0 10 20 Km


BIG OR UNIVERSITY MESA RANGE
DUE NORTH EAST OF VINEYARD
360° KEY
1
BIG OR UNIVERSITY MESA RANGE
NORTH OF VINEYARD (SLIGHTLY N.W.)
WINERY
2

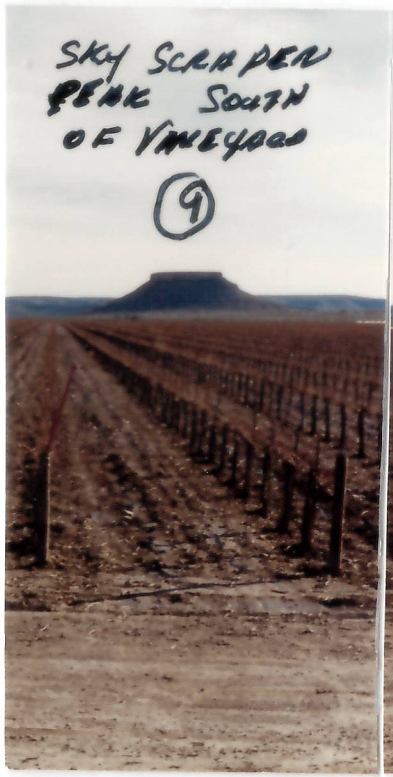

UNNAMED MESA RANGE
E.N.E. OF VINEYARD
3
VINEYARD OFFICE & EQUIPMENT AREA
BIG MESA DUE EAST OF VINEYARD
4


Little MESA w/ MC KENZIE
RANGE IN BACK GROUND
(5)


MC KENZIE MESA
OF THE VINEYARDS
(6)


Range which Runs
& Forms V. D. Boundry on
7


From S.S.E. To East
East Side
8


SKY SCRAPER
PEAK SOUTH
OF VINEYARD
9


BIG BALDY
PEAK S.W.
OF VINEYARD
10


UNNAMED MES.
WITH ELEVA
11


RANGES WEST OF VINEYARD
NS UP TO 3400 FEET
12


DARREL'S PEAK
13

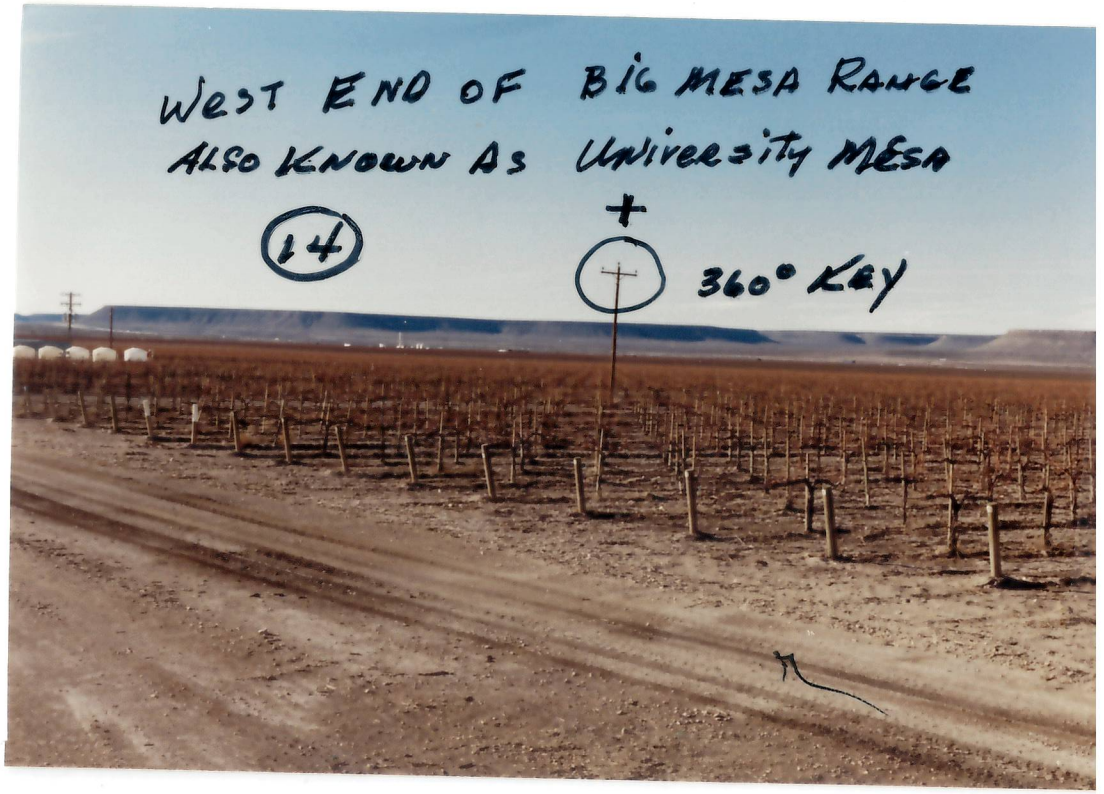

WEST END OF BIG MESA RANGE
ALSO KNOWN AS University MESA
14
360° KEY

Exhibit XVI - Terry Whigham's letter to Mr. Richard Patterson

Terry Whigham
Soil Conservation Service
505 N. Main
Ft. Stockton, Tx 79735

19 January 1990

Richard Patterson
TAE[illegible]X
Sanderson Hwy
Ft. Stockton, Tx 79735

Dear Rick,

Enclosed is a ownership map of Pecos County showing the various ranches and farming areas. I have gone back through the water quality records of Pecos County which our office collects, and have plotted some of this data on the ownership map. The SCS has tested the EC (Electrical Conductivity) on various water samples in the County since 1969. The EC of the water give a reading of total dissolved solids in the water. One EC relates to 640 ppm. I tried to use only the most recent readings in the county, but there are areas in which the only data was taken in earlier years.

When one observes the data surrounding the Viticultural Area, it is easy to see that the water quality drops as you go either west or north. The greatest deterioation in quality occurs as you get closer to the Pecos River on the north boundary of the county. This is evidences by the readings taken in the Imperial, Girvin, and Bakersfield areas. The quaility increases to the east, but this is in the Edwards Plateau ranching area and it typically very shallow soils and mountains. The Coyanosa area's water quality is close to the Viticultural Area's, however only the lower range is equivalent. The upper range doubles on certain farms.

Bulletin 6106, prepared by the USGS and Texas Board of Water Engineers on Pecos County, has early data (1961) which supports the premise that the dissolved chlorides, sulfates, and total dissolved solids increases to the north as one approaches the Pecos River. Recent EC measurements after years of irrigation water pumping now show that the Coyanosa area has increased since 1961, although our office does not have actual water analysis breakdowns on this.

In a previous discussion you wanted to know the difference between a draw and a valley. There is no difference between the two in my opinion. A valley is usually thought of as an elongate depression, usually with an outlet, between bluffs, or between ranges of hills or

mountains as described Webster's New Collegiate Dictionary. The ranchers in this area of the country typically speak of a draw as the low area between mesas or mountains, and the draws are typically the overflow areas with better grass production. As they carry flood waters toward the river areas during large storms, these draws or low areas or valleys receive the extra water needed for the higher forage production. In summary, the people and ranchers of this area use the term "draw" as a local expression to denote an area of the landscape which others term "valley".

If I can be of any further assistance, feel free to contact our office.

Sincerely,

Terry Whigham
District Conservationist

Ft. Stockton Tex.

TEXAS BOARD OF WATER ENGINEERS

Durwood Manford, Chairman
R. M. Dixon, Member
O. F. Dent, Member

BULLETIN 6106

VOLUME I

GEOLOGY AND GROUND-WATER RESOURCES OF PECOS COUNTY, TEXAS

Includes Records of Wells

Prepared by the United States Geological Survey
and the
Texas Board of Water Engineers
in cooperation with Pecos County

October 1961

Quality of Water

Characteristically, ground water in the Pecos aquifer is very hard and has a wide range in dissolved solids. The contour line on 1,000 ppm of dissolved solids (plate 15) divides the aquifer in Pecos County into three parts with respect to quality of water. The dissolved-solids content is less than 500 ppm in western Pecos County near the Barilla Mountains. Toward the east the concentration increases gradually; however, on the west side of the ground-water trough from near Hovey in quadrangle HH to the Leon-Belding irrigation area the dissolved-solids content increases about 300 to 500 ppm. The dissolved-solids content of the water is less than 500 ppm in most of eastern Pecos County, but near the western edge of the Stockton Plateau the concentration increases to more than 1,000 ppm. Thus, the ground water in the central part of the county is of poor quality in comparison with that in the eastern and western parts. Near Imperial, in the north-central part of the county, the ground water is of even poorer quality because some of the water in this part of the county is recirculated spring flow and probably has been concentrated to some extent by evapotranspiration. Furthermore, the Pecos aquifer in the north-central part of the county probably receives considerable saline inflow from the Rustler formation.

The quality of water changes comparatively little between the southwestern part of the county and an east-west line through Fort Stockton. Directly north of this line the dissolved-solids content increases from about 1,500 ppm to more than 2,500 ppm. About 10 miles northeast of Fort Stockton the concentration is more than 5,000 ppm, and northward toward Imperial increases to a known maximum of 13,300 ppm in well C-13.

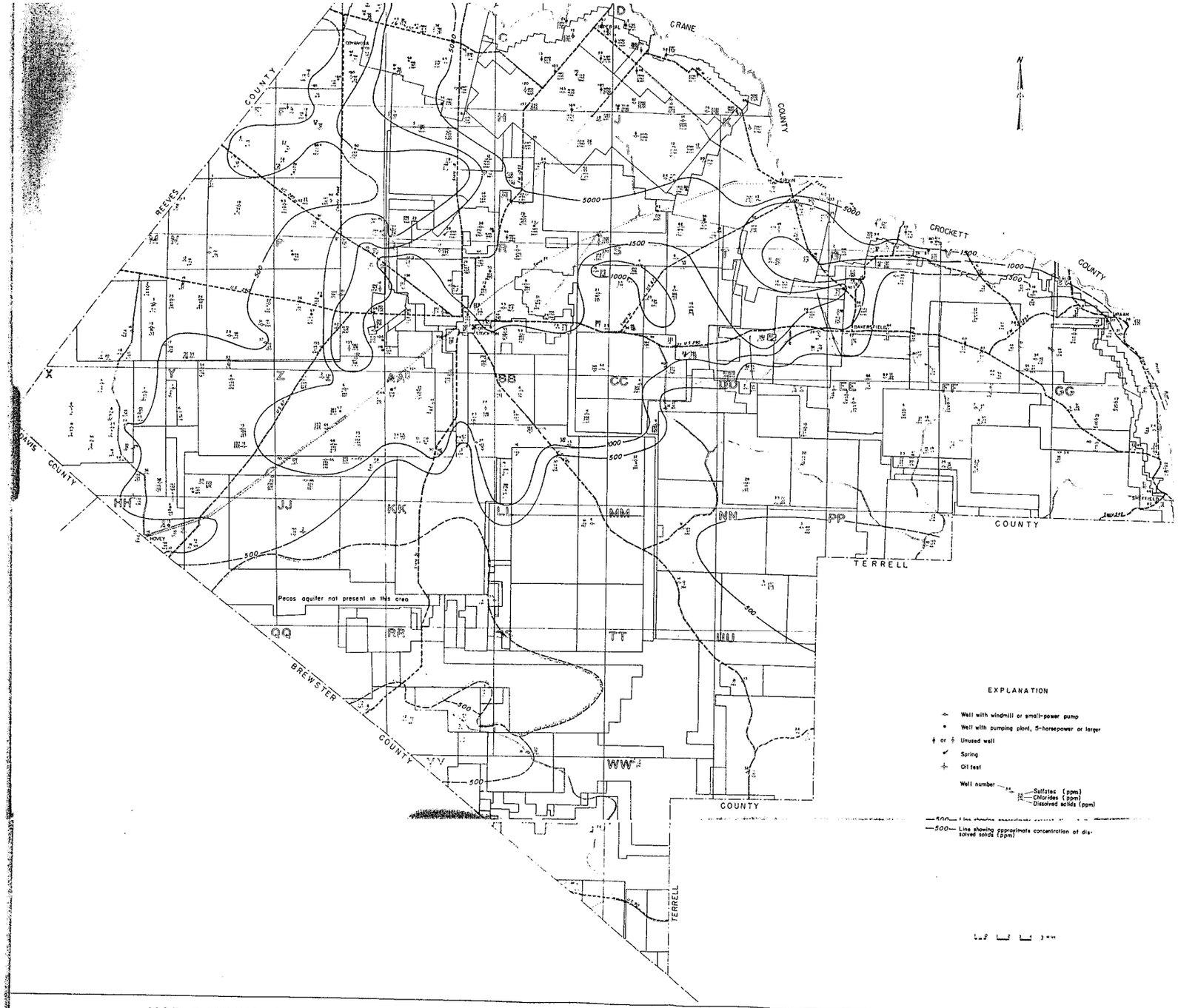
In the eastern and western parts of the county, the ground water is suitable for irrigation, municipal, and most other uses. However, the water used for municipal supply in the Fort Stockton area is of poorer quality than that recommended by the U. S. Health Service and the water used for irrigation in the north-central part of the county contains nearly 6,000 ppm of dissolved solids. The quality of water in each area is discussed in more detail in a section devoted to that area.

North Coyanosa Irrigation Area

Development of Water Supplies

The North Coyanosa irrigation area, containing about 37,000 acres of land prepared for irrigation, is near the lower reaches of Coyanosa Draw in the northwestern part of Pecos County (plate 3, Volume I, in pocket). The area, about 2 to 10 miles wide and about 15 miles long, roughly overlies the erosion and slumpage trough which is filled with Cenozoic alluvium. About 16,500 acres was irrigated in 1958 with approximately 85,000 acre-feet of ground water. The total withdrawal of water was estimated by measuring the quantity of water pumped per cubic foot of natural gas used and then multiplying by the number of cubic feet of natural gas consumed in the North Coyanosa irrigation area. The gallons of water per cubic foot of natural gas ratio was determined at 30 sites serviced by 23 meters.

Before the first irrigation well was drilled in 1948, the North Coyanosa irrigation area like most of West Texas, was cattle range. More than 300



MAP SHOWING SULFATE, CHLORIDE AND DISSOLVED SOLIDS IN WATER OF PECOS AQUIFER, PECOS COUNTY

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
505 MAIN
FT. STOCKTON TX 79735
(915) 336-3921

Joe Flynn
Ste. Genevieve Vineyard & Winery
Dormaine Cordier, USA Inc.
1437 Dorris St.
Hurst, Tx 76053

19 October 1990

Dear Sir,

This letter is in reponse to your querry as to whether the Ste. Genevieve Vineyard and Winery falls within a geographic area that is unique to its water quality. After studying the recent water analysis reports which Ste. Genevieve provided me, I can definitely state that the water quality in the Vineyards is unique to the rest of Pecos County.

Our office has tested the EC (Electrical Conductivity) on various water samples in Pecos County since 1969. The EC reading reflects the total dissolved solids in the water. One EC relates to 640 ppm.

When one observes the data surrounding the Viticultural area, one sees that the water quality drops as you go either west or north. The greatest deterioation in quality occurs close to the Pecos River on the north boundary of the county. The quality is highest in the eastern part of the county, and occurs primarily in the Edwards Plateau ranching area and typically contains shallow soils and mountains. Westward towards Ft. Stockton finds the water quality again increasing in total dissolved solids. The irrigation water found in the Girvin area to the north produces ECs that range from 3.5 to 5.0. Ft. Stockton's city water, produced at Belding, ranges from 2.2 to 2.6 while the irrigation water at Coyanosa has ranged from 1.3 to 4.8 with the majority of readings occurring through the years in the 2.0 to 3.6 range. Recent readings in the Bakersville Valley near the Pecos River have deterioated in the last three to four years. Wells once testing 5.0 to 7.0, now read above 10.0.

Summarizing the recent water quality analysis from the Vineyard wells reveals the following:

6 wells < 0.7 EC
5 wells < 2.0 EC
7 wells > 2.3 EC and < 7.1

As demonstrated by this data, this is the only agricultural area which still has a significant number of wells producing high quality water. The medium quality range still exceeds the Coyanosa area values and is good quality irrigation water for this county. I was unable to determine from the data whether the lower quality values came from shallow wells near the edge of the draw, or just why these Particular wells were higher. It is still my opinion that the eleven good wells justify the premise that this area is unique in Pecos County as to its high quality of water.

Sincerely,

Terry Whigham
District Conservationist

Exhibit XVII – Richard Patterson's Computer Detail

Monthly and Annual Climatological Data

Temperature

Bakersfield =BK

StaYr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
BK 79	39.5	47.5	57.4	67.8	73.1	78.8	84.6	81.4	76.5	71.3	52.9	48.2	64.9
BK 80	48.7	50.5	57.2	64.8	74.5	86.2	88.3	82.5	77.4	64.1	51.2	48.3	66.1
BK 81	46.4	51.6	55.6	67.9	71.8	79.4	83.8	80.8	77.7	66.7	58.5	50.9	65.9
BK 82	46.1	48.1	62.0	68.5	73.0	81.7	84.3	85.5	80.3	67.3	55.4	46.1	66.5
BK 83	45.6	50.1	58.7	63.8	75.0	79.5	84.8	84.9	79.7	68.6	58.5	40.4	65.8
BK 84	41.2	50.6	58.9	66.8	76.3	80.8	83.4	84.3	75.3	65.2	55.0	53.0	65.9
BK 85	42.2	49.5	61.7	70.0	78.4	79.8	82.5	85.1	77.3	67.9	62.0	47.2	67.0
BK 86	50.5	57.1	63.7	73.5	76.6	80.1	83.7	82.1	78.2	65.4	55.3	47.3	67.8
BK 87	47.5	51.1	54.4	63.1	72.5	77.7	81.4	82.9	75.3	68.9	56.0	49.1	65.0
BK 88	44.6	51.9	59.4	68.4	73.6	81.5	81.9	82.4	77.4	69.0	60.6	49.5	66.7
BK 89	51.7	50.0	62.2	71.3	81.2	81.2	85.0	82.9	75.5	70.2			71.1
BK ----------													
'88Avg	45.2	50.8	58.9	67.5	74.5	80.6	83.9	83.2	77.5	67.4	56.5	48.0	
'89Avg	45.8	50.7	59.2	67.8	75.1	80.6	84.0	83.2	77.3	67.7	56.5	48.0	

Ozona =OZ

StaYr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
OZ 79	37.2	45.3	56.3	65.8	71.0	75.4	81.9	79.1	73.7	68.0	49.6	47.0	62.5
OZ 80	46.4	48.4	55.3	62.7	72.3	82.2	85.4	80.2	76.6	62.9	49.3	47.4	64.1
OZ 81	45.3	49.2	53.8	66.1	71.2	76.4	81.0	80.2	75.0	65.8	54.9	45.1	63.7
OZ 82	44.2	45.5	58.8	65.5	70.9	79.0	82.4	82.4	77.0	65.7	54.1	45.8	64.3
OZ 83	43.6	47.7	56.8	61.6		76.5	82.2	81.6	76.6	67.5	55.6	36.8	62.4
OZ 84	40.0	48.0	56.5	63.8	74.4	79.4	80.7	81.0	73.8	64.5	52.1	49.9	63.7
OZ 85	38.1	45.2	57.3	65.1	72.9	76.2	77.4	82.6	74.7	65.5	58.1	43.4	63.0
OZ 86	45.2	52.0	59.7	69.4	73.5	77.4	80.8	80.3	75.9	63.2	54.1	45.3	64.7
OZ 87	46.0	50.3	51.1	60.7	70.5	75.1	78.1	80.7	72.9	65.3	52.7	44.4	62.3
OZ 88	41.2	46.6	56.2	63.5	70.6	77.3	78.8	79.2	74.2	64.4	55.8	45.9	62.8
OZ 89	47.7	44.4	55.4	65.3	76.7	77.6	81.0	80.4	71.1	65.0			66.5
OZ ----------													
'88Avg	42.7	47.8	56.2	64.4	71.9	77.5	80.9	80.7	75.0	65.3	53.6	45.1	
'89Avg	43.2	47.5	56.1	64.5	72.4	77.5	80.9	80.7	74.7	65.3	53.6	45.1	

Fort Stockton =FS

StaYr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
FS 79	39.4	46.6	54.6	64.2	69.5	75.0	81.9	78.2	73.1	69.1	50.5	46.4	62.4
FS 80	47.2	49.0	55.9	61.6	72.0	85.5	86.2	81.3	74.5	60.8	48.8	49.2	64.3
FS 81	45.6	50.2	52.4	65.4	70.6	78.7	82.6	77.7	75.4	65.3	56.8	50.5	64.3
FS 82	48.1	49.9	59.8	67.6	71.5	78.0	81.4	81.2	78.4	65.8	52.5	44.2	64.9
FS 83	41.5	50.3	55.4	62.5	73.8	77.7	79.8	79.7	77.6	67.6	56.6	41.7	63.7
FS 84	40.4	50.7	57.2	63.7				81.7	74.7	63.6	56.1	50.8	59.9
FS 85	40.6	45.5	60.5	68.6	76.0	79.3	81.7	83.9	76.7	65.8	60.0	45.8	65.4
FS 86	49.2	54.4	61.7	72.0	74.4	79.6	83.0	80.7	76.0	63.5	53.4	45.7	66.1
FS 87	45.8	49.6	52.2	59.8	70.4	77.8	81.4	82.3	74.4	67.6	54.5	46.9	63.6
FS 88	42.6	49.3	56.9	65.9	72.3	79.8	81.2	80.6	75.6	67.1	58.1	46.4	64.7
FS 89	48.0	48.3	59.4	68.9	78.3	81.3	83.9	81.3	73.4	67.9			69.1
FS ----------													
'88Avg	44.0	49.6	56.7	65.1	72.3	79.0	82.1	80.7	75.6	65.6	54.7	46.8	
'89Avg	44.4	49.4	56.9	65.5	72.9	79.3	82.3	80.9	75.4	65.8	54.7	46.8	

Source:National Oceanic and Atmospheric Administration's
Climatological Data Annual Summary, 1988 and Climatological Data

Monthly and Annual Climatological Data

Rainfall

Bakersfield =BK

StaYr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
BK 79	0.53	1.06	0.39	0.12	0.58	2.36	0.84	2.80	0.73	0.00	0.00	1.02	10.43
BK 80	0.35	0.25	0.00	0.06	0.95	0.95	0.05	2.65	6.90	1.66	1.03	0.76	15.61
BK 81	1.37	0.05	1.25	3.62	4.42	0.56	0.81	1.18	0.32	4.69	0.00	0.00	18.27
BK 82	0.12	0.09	0.03	0.7	2.96	1.21	2.77	0.27	0.26	0.20	0.75	1.66	11.02
BK 83	0.40	0.31	0.26	0.16	1.25	0.65	0.00	0.05	0.10	4.21	0.39	0.02	7.80
BK 84	1.03	0.11	0.08	0.00	1.88	1.67	0.23	0.00	3.85	3.64	0.96	1.30	14.75
BK 85	0.75	0.67	0.67	0.10	0.46	1.45	0.91	1.94	2.44	1.91	0.16	0.00	11.46
BK 86	0.30	0.50	0.04	2.78	0.84	3.47	0.10	1.42	1.24	13.3	1.30	2.97	28.28
BK 87	0.05	1.74	0.58	2.44	4.57	6.02	0.22	2.87	4.32	1.54	0.00	0.93	25.28
BK 88	0.00	0.09	0.08	0.25	1.42	0.39	0.84	1.27	4.49	0.13	0.00	0.21	9.17
BK 89	0.48	1.38	0.24	0.50	0.00	2.43	0.84	0.82	1.82	0.26			8.77
BK ----------													
'88Avg	0.49	0.49	0.34	1.02	1.93	1.87	0.68	1.45	2.47	3.13	0.46	0.89	15.21
'89Avg	0.49	0.57	0.33	0.98	1.76	1.92	0.69	1.39	2.41	2.87	0.46	0.89	14.74

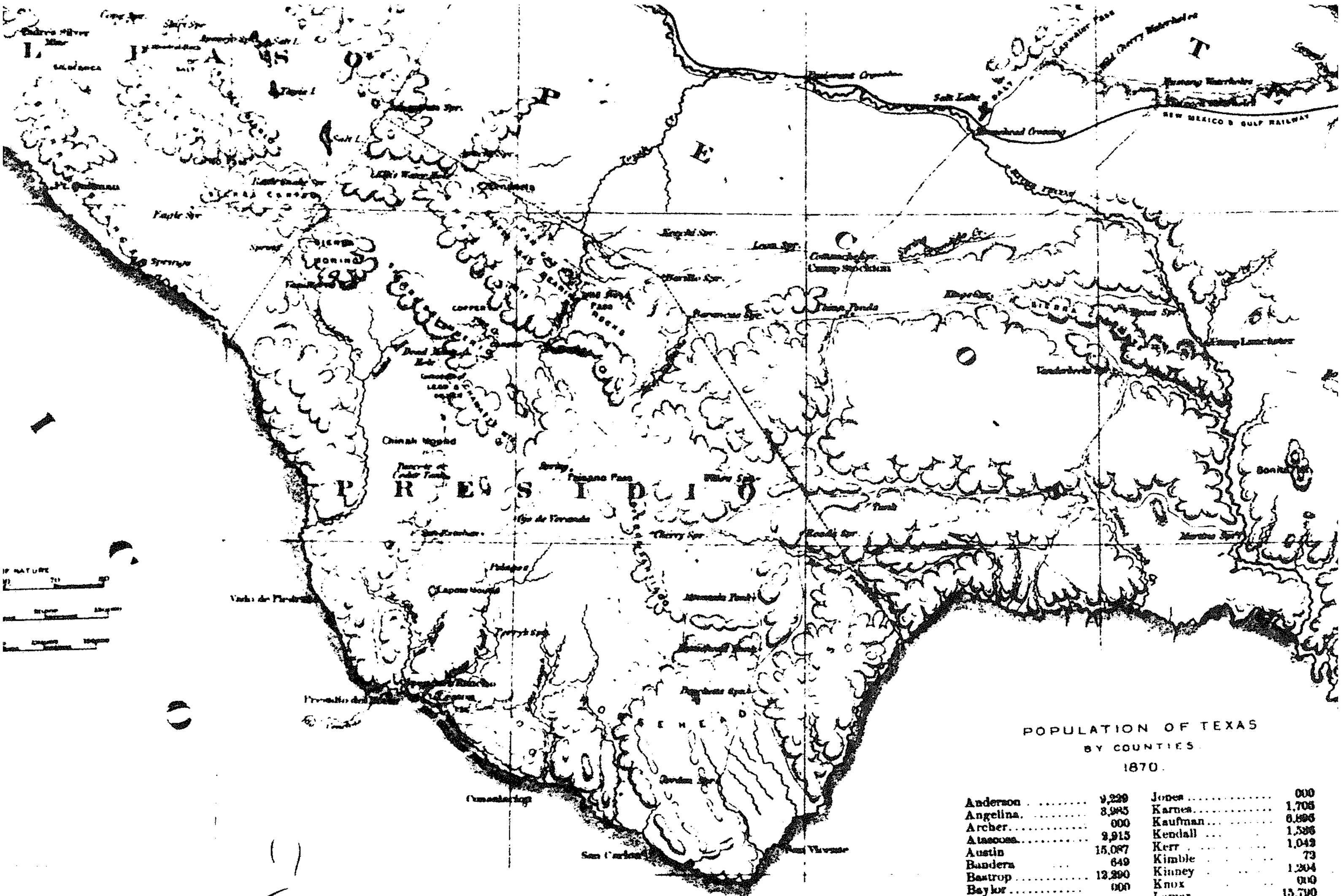
Ozona =OZ

StaYr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
OZ 79	0.00	1.09	2.35	0.70	1.93	3.55	1.30	1.77	0.41	0.05	0.00	1.15	14.30
OZ 80	0.81	0.06	0.58	0.15	3.51	0.77	0.00	2.05	5.61	0.23	2.22	1.15	17.14
OZ 81	1.06	0.30	2.25	5.74	4.22	2.58	0.31	2.38	1.12	5.05	0.00	0.00	25.01
OZ 82	0.50	1.07	0.00	0.41	3.56	1.16	0.29	1.37	0.50	1.96	1.03	0.92	12.77
OZ 83	1.88	1.27	1.03	0.60		2.21	0.00	0.93	0.06	5.73	1.13	0.00	14.84
OZ 84	1.82	0.03	1.05	0.08	0.96	2.20	0.73	0.10	1.54	2.85	1.64	2.37	15.37
OZ 85	2.54	0.70	1.30	2.08	1.82	5.54	1.26	0.42	6.59	2.97	0.44	0.00	25.66
OZ 86	1.00	0.51	0.34	0.15	2.98	3.02	0.19	7.28	0.41	7.41	1.01	1.89	26.19
OZ 87	0.47	2.40	1.29	1.73	5.42	2.61	0.00	3.42	2.05	0.28	0.31	1.17	21.15
OZ 88	0.07	0.03	0.01	0.57	1.35	2.84	3.74	0.90	6.47	0.00	0.00	0.55	16.53
OZ 89	0.47	2.90	1.21	0.02	1.07	0.30	0.07	0.60	1.35	2.48			10.47
OZ ----------													
'88Avg	1.02	0.75	1.02	1.22	2.86	2.65	0.78	2.06	2.48	2.65	0.78	0.92	18.90
'89Avg	0.97	0.94	1.04	1.11	2.68	2.43	0.72	1.93	2.37	2.64	0.78	0.92	18.53

Fort Stockton =FS

StaYr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
FS 79	0.35	0.56	0.34	0.03	0.53	0.83	2.27	2.18	0.80	0.00	0.00	1.68	9.57
FS 80	0.53	0.32	0.00	0.41	2.29	1.02	0.35	3.54	10.1	0.58	2.28	1.27	22.68
FS 81	1.69	0.11	1.07	2.25	1.93	1.46	2.11	2.44	2.48	3.84	0.00	0.04	19.42
FS 82	0.03	0.03	0.00	3.01	2.52	2.33	1.21	1.73	0.32	0.38	0.52	1.18	13.26
FS 83	0.61	0.12	0.41	0.00			0.00	0.01	0.36	5.65	1.43	0.17	8.76
FS 84	0.45	0.03	0.00	0.00				0.10	3.23	3.63	1.11	0.81	9.36
FS 85	1.32	0.51	0.75	0.27	1.26	3.21	1.64	1.64	1.82	2.41	0.77		15.60
FS 86	1.06	0.28	0.06	0.83	0.98	1.38	0.65	3.76	3.48	8.33	0.61	2.86	24.28
FS 87	0.71	0.67	0.80	2.02	1.53	1.06	1.92	1.12	2.82	1.14	0.00	0.94	14.73
FS 88	0.04	0.15	0.00	0.04	1.14	2.62	1.16	1.79	6.62	0.03	0.00	1.39	14.98
FS 89	0.35	1.41	0.46	0.34	4.41	2.11	0.29	2.16	0.98	0.27			12.78
FS ----------													
'88Avg	0.68	0.28	0.34	0.89	1.52	1.74	1.26	1.83	3.20	2.60	0.67	1.15	15.26
'89Avg	0.65	0.38	0.35	0.84	1.84	1.78	1.16	1.86	3.00	2.39	0.67	1.15	16.07

Source:National Oceanic and Atmospheric Administration's Climatological Data Annual Summary, 1979-1988 and Climatological Data, Texas, January-October, 1989



COLTON'S NEW MAP OF THE STATE OF TEXAS

ndian Territory and adjoining portions of
ew Mexico, Lonisiana and Arkansas.

from the Official County Maps of the General Land Office.
the personal reconnaissances and geological explorations of

PROF. A. R. ROESSLER,

he Mexican Boundary Commission, U.S. Engineers, U.S. Coast Survey, U.S. General Land Office,
Rail Road Co's information [illegible] and [illegible] authentic materials by

G. WOODWORTH COLTON.

POPULATION OF TEXAS BY COUNTIES 1870.

Anderson	9,229	Jones	000
Angelina	8,985	Karnes	1,705
Archer	000	Kaufman	6,895
Atascosa	2,915	Kendall	1,536
Austin	15,087	Kerr	1,042
Bandera	649	Kimble	73
Bastrop	12,290	Kinney	1,204
Baylor	000	Knox	000
Bee	1,083	Lamar	15,790
Bell	9,771	Lampasas	1,344
Bexar	16,043	La Salle	69
Bexar District	1,077	Lavaca	9,168
Blanco	1,187	Leon	6,523
Bosque	4,981	Liberty	4,414
Bowie	4,684	Limestone	8,591
Brazoria	7,527	Live Oak	852
Brazos	9,205	Llano	1,379
Brown	544	Madison	4,061
Buchanan	000	Marion	8,562
Burleson	8,072	Mason	678
Burnet	3,688	Matagorda	3,377
Caldwell	6,572	Maverick	1,951
Calhoun	3,443	McCulloch	173
Callahan	000	McLennan	13,500
Cameron	10,999	McMullen	230
Cass	000	Medina	2,078
Chambers	1,508	Menard	667
Cherokee	11,079	Menora	000
Clay	000	Milam	8,984
Coleman	347	Montague	890
Collin	14,013	Montgomery	6,483
Colorado	8,326	Nacogdoches	9,614
Comal	5,283	Navarro	8,879
Comanche	1,001	Newton	2,187
Concho	000	Nueces	3,975
Cook	5,315	Orange	1,255
Coryell	4,124	Palo Pinto	000
Dallas	13,314	Panola	10,119
Davis	8,875	Parker	4,186
Dawson	000	Polk	8,707
Demmit	109	Presidio	1,636
Denton	7,251	Red River	10,653
De Witt	6,443	Refugio	2,324
Duval	1,083	Robertson	9,990
Eastland	88	Runnels	000
Edwards	000	Rusk	16,916
Ellis	7,514	Sabine	3,256
El Paso	3,671	San Augustine	4,196
Encinal	427	San Patricio	602
Erath	1,801	San Saba	1,425
Falls	9,851	Shackleford	455
Fannin	13,207	Shelby	5,732
Fayette	16,863	Smith	16,532
Fort Bend	7,114	Starr	4,154
Freestone	8,139	Stephens	330
Frio	309	Tarrant	5,788
Galveston	15,290	Taylor	000
Gillespie	3,566	Throckmorton	000
Goliad	3,628	Titus	11,339
Gonzales	8,951	Travis	13,153
Grayson	14,387	Trinity	4,141
Grimes	13,218	Tyler	5,010
Guadalupe	7,283	Upshur	12,039
Hamilton	733	Uvalde	851
Hardeman	000	Van Zandt	6,494
Hardin	1,460	Victoria	4,860
Harris	17,375	Walker	9,776
Harrison	13,241	Washington	23,104
Haskell	000	Webb	2,615
Hays	4,088	Wharton	3,426
Henderson	6,786	Wichita	000
Hidalgo	2,387	Wilbarger	000
Hill	7,453	Williamson	6,368
Hood	2,585	Wilson	2,556
Hopkins	12,651	Wise	1,450
Houston	8,147	Wood	6,894
Hunt	10,291	Young	13[illegible]

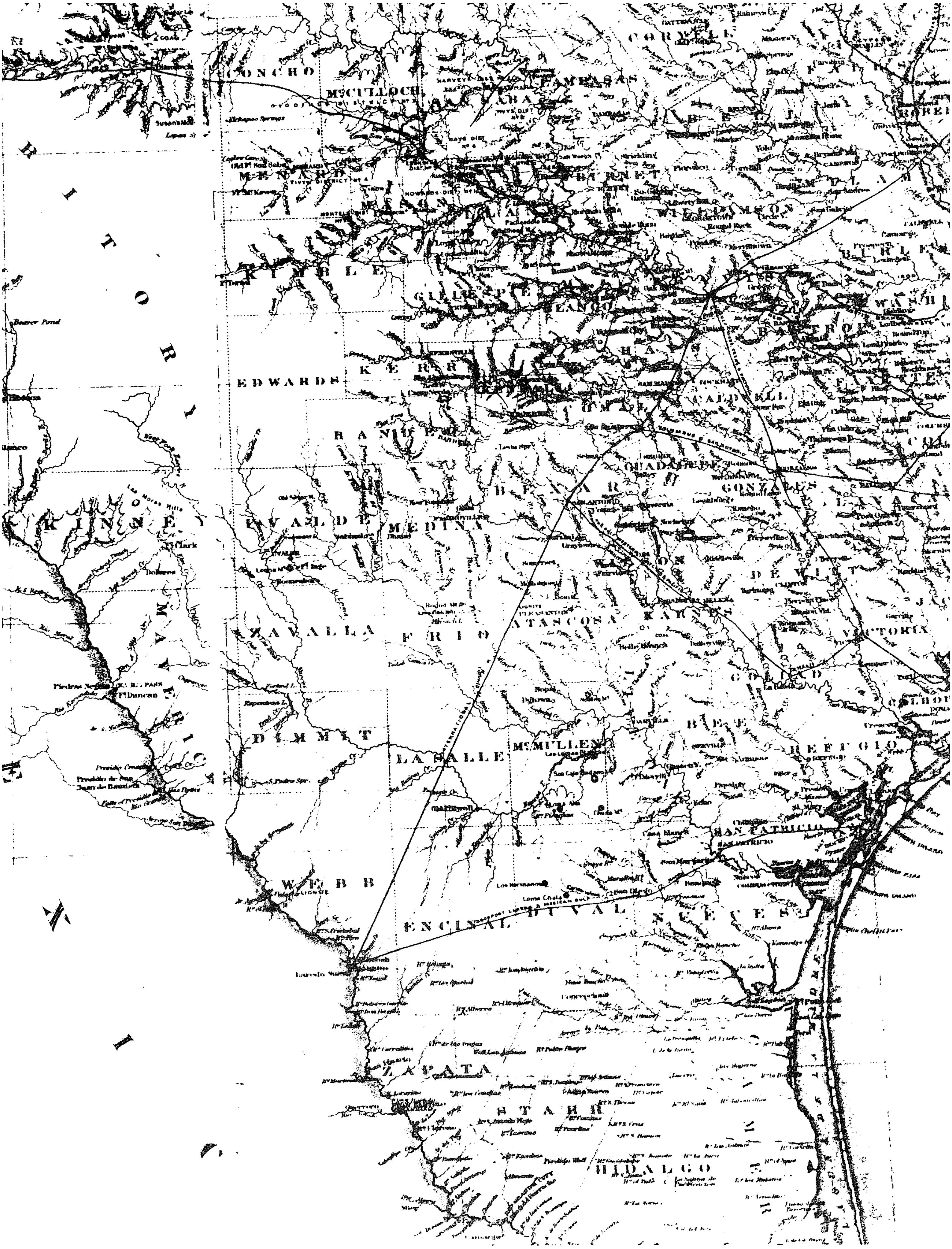

CONCHO
McCULLOCH
CORYELL
MENARD
BURNET
WILLIAMSON
KIMBLE
EDWARDS
HAYS
CALDWELL
GUADALUPE
BEXAR
MEDINA
KINNEY
ZAVALLA
FRIO
ATASCOSA
GOLIAD
DIMMIT
LA SALLE
McMULLEN
WEBB
ENCINAL
DUVAL
NUECES
SAN PATRICIO
VICTORIA
ZAPATA
STARR
HIDALGO
Fᵗ Duncan
Beaver Pond

Exhibit XV - Memo w/enclosures from
Richard Patterson

Texas Agricultural Extension Service

The enclosed material is for your information.

Sincerely,

Richard W. Patterson, Jr.

Richard W. Patterson, Jr.
Extension Economist-Management
500 North Spring Drive
P. O. Box 1298
Fort Stockton, Texas 79735
(915) 336-8585

RWP:gc

Monthly and Annual Climatological Data

Rainfall

Bakersfield =BK

StaYr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
BK 79	0.53	1.06	0.39	0.12	0.58	2.36	0.84	2.80	0.73	0.00	0.00	1.02	10.43
BK 80	0.35	0.25	0.00	0.06	0.95	0.95	0.05	2.65	6.90	1.66	1.03	0.76	15.61
BK 81	1.37	0.05	1.25	3.62	4.42	0.56	0.81	1.18	0.32	4.69	0.00	0.00	18.27
BK 82	0.12	0.09	0.03	0.7	2.96	1.21	2.77	0.27	0.26	0.20	0.75	1.66	11.02
BK 83	0.40	0.31	0.26	0.16	1.25	0.65	0.00	0.05	0.10	4.21	0.39	0.02	7.80
BK 84	1.03	0.11	0.08	0.00	1.88	1.67	0.23	0.00	3.85	3.64	0.96	1.30	14.75
BK 85	0.75	0.67	0.67	0.10	0.46	1.45	0.91	1.94	2.44	1.91	0.16	0.00	11.46
BK 86	0.30	0.50	0.04	2.78	0.84	3.47	0.10	1.42	1.24	13.3	1.30	2.97	28.28
BK 87	0.05	1.74	0.58	2.44	4.57	6.02	0.22	2.87	4.32	1.54	0.00	0.93	25.28
BK 88	0.00	0.09	0.08	0.25	1.42	0.39	0.84	1.27	4.49	0.13	0.00	0.21	9.17
BK 89	0.48	1.38	0.24	0.50	0.00	2.43	0.84	0.82	1.82	0.26			8.77
'88Avg	0.49	0.49	0.34	1.02	1.93	1.87	0.68	1.45	2.47	3.13	0.46	0.89	15.21
'89Avg	0.49	0.57	0.33	0.98	1.76	1.92	0.69	1.39	2.41	2.87	0.46	0.89	14.74

Ozona =OZ

StaYr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
OZ 79	0.00	1.09	2.35	0.70	1.93	3.55	1.30	1.77	0.41	0.05	0.00	1.15	14.30
OZ 80	0.81	0.06	0.58	0.15	3.51	0.77	0.00	2.05	5.61	0.23	2.22	1.15	17.14
OZ 81	1.06	0.30	2.25	5.74	4.22	2.58	0.31	2.38	1.12	5.05	0.00	0.00	25.01
OZ 82	0.50	1.07	0.00	0.41	3.56	1.16	0.29	1.37	0.50	1.96	1.03	0.92	12.77
OZ 83	1.88	1.27	1.03	0.60		2.21	0.00	0.93	0.06	5.73	1.13	0.00	14.84
OZ 84	1.82	0.03	1.05	0.08	0.96	2.20	0.73	0.10	1.54	2.85	1.64	2.37	15.37
OZ 85	2.54	0.70	1.30	2.08	1.82	5.54	1.26	0.42	6.59	2.97	0.44	0.00	25.66
OZ 86	1.00	0.51	0.34	0.15	2.98	3.02	0.19	7.28	0.41	7.41	1.01	1.89	26.19
OZ 87	0.47	2.40	1.29	1.73	5.42	2.61	0.00	3.42	2.05	0.28	0.31	1.17	21.15
OZ 88	0.07	0.03	0.01	0.57	1.35	2.84	3.74	0.90	6.47	0.00	0.00	0.55	16.53
OZ 89	0.47	2.90	1.21	0.02	1.07	0.30	0.07	0.60	1.35	2.48			10.47
OZ '88Avg	1.02	0.75	1.02	1.22	2.86	2.65	0.78	2.06	2.48	2.65	0.78	0.92	18.90
OZ '89Avg	0.97	0.94	1.04	1.11	2.68	2.43	0.72	1.93	2.37	2.64	0.78	0.92	18.53

Fort Stockton =FS

StaYr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
FS 79	0.35	0.56	0.34	0.03	0.53	0.83	2.27	2.18	0.80	0.00	0.00	1.68	9.57
FS 80	0.53	0.32	0.00	0.41	2.29	1.02	0.35	3.54	10.1	0.58	2.28	1.27	22.68
FS 81	1.69	0.11	1.07	2.25	1.93	1.46	2.11	2.44	2.48	3.84	0.00	0.04	19.42
FS 82	0.03	0.03	0.00	3.01	2.52	2.33	1.21	1.73	0.32	0.38	0.52	1.18	13.26
FS 83	0.61	0.12	0.41	0.00			0.00	0.01	0.36	5.65	1.43	0.17	8.76
FS 84	0.45	0.03	0.00	0.00				0.10	3.23	3.63	1.11	0.81	9.36
FS 85	1.32	0.51	0.75	0.27	1.26	3.21	1.64	1.64	1.82	2.41	0.77		15.60
FS 86	1.06	0.28	0.06	0.83	0.98	1.38	0.65	3.76	3.48	8.33	0.61	2.86	24.28
FS 87	0.71	0.67	0.80	2.02	1.53	1.06	1.92	1.12	2.82	1.14	0.00	0.94	14.73
FS 88	0.04	0.15	0.00	0.04	1.14	2.62	1.16	1.79	6.62	0.03	0.00	1.39	14.98
FS 89	0.35	1.41	0.46	0.34	4.41	2.11	0.29	2.16	0.98	0.27			12.78
FS '88Avg	0.68	0.28	0.34	0.89	1.52	1.74	1.26	1.83	3.20	2.60	0.67	1.15	15.26
FS '89Avg	0.65	0.38	0.35	0.84	1.84	1.78	1.16	1.86	3.00	2.39	0.67	1.15	16.07

Source:National Oceanic and Atmospheric Administration's Climatological Data Annual Summary,1979-1988 and Climatological Data, Texas,January-October,1989

Monthly and Annual Climatological Data
Temperature

Bakersfield =BK

StaYr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
BK 79	39.5	47.5	57.4	67.8	73.1	78.8	84.6	81.4	76.5	71.3	52.9	48.2	64.9
BK 80	48.7	50.5	57.2	64.8	74.5	86.2	88.3	82.5	77.4	64.1	51.2	48.3	66.1
BK 81	46.4	51.6	55.6	67.9	71.8	79.4	83.8	80.8	77.7	66.7	58.5	50.9	65.9
BK 82	46.1	48.1	62.0	68.5	73.0	81.7	84.3	85.5	80.3	67.3	55.4	46.1	66.5
BK 83	45.6	50.1	58.7	63.8	75.0	79.5	84.8	84.9	79.7	68.6	58.5	40.4	65.8
BK 84	41.2	50.6	58.9	66.8	76.3	80.8	83.4	84.3	75.3	65.2	55.0	53.0	65.9
BK 85	42.2	49.5	61.7	70.0	78.4	79.8	82.5	85.1	77.3	67.9	62.0	47.2	67.0
BK 86	50.5	57.1	63.7	73.5	76.6	80.1	83.7	82.1	78.2	65.4	55.3	47.3	67.8
BK 87	47.5	51.1	54.4	63.1	72.5	77.7	81.4	82.9	75.3	68.9	56.0	49.1	65.0
BK 88	44.6	51.9	59.4	68.4	73.6	81.5	81.9	82.4	77.4	69.0	60.6	49.5	66.7
BK 89	51.7	50.0	62.2	71.3	81.2	81.2	85.0	82.9	75.5	70.2			71.1

'88Avg	45.2	50.8	58.9	67.5	74.5	80.6	83.9	83.2	77.5	67.4	56.5	48.0	
'89Avg	45.8	50.7	59.2	67.8	75.1	80.6	84.0	83.2	77.3	67.7	56.5	48.0	

Ozona =OZ

StaYr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
OZ 79	37.2	45.3	56.3	65.8	71.0	75.4	81.9	79.1	73.7	68.0	49.6	47.0	62.5
OZ 80	46.4	48.4	55.3	62.7	72.3	82.2	85.4	80.2	76.6	62.9	49.3	47.4	64.1
OZ 81	45.3	49.2	53.8	66.1	71.2	76.4	81.0	80.2	75.0	65.8	54.9	45.1	63.7
OZ 82	44.2	45.5	58.8	65.5	70.9	79.0	82.4	82.4	77.0	65.7	54.1	45.8	64.3
OZ 83	43.6	47.7	56.8	61.6		76.5	82.2	81.6	76.6	67.5	55.6	36.8	62.4
OZ 84	40.0	48.0	56.5	63.8	74.4	79.4	80.7	81.0	73.8	64.5	52.1	49.9	63.7
OZ 85	38.1	45.2	57.3	65.1	72.9	76.2	77.4	82.6	74.7	65.5	58.1	43.4	63.0
OZ 86	45.2	52.0	59.7	69.4	73.5	77.4	80.8	80.3	75.9	63.2	54.1	45.3	64.7
OZ 87	46.0	50.3	51.1	60.7	70.5	75.1	78.1	80.7	72.9	65.3	52.7	44.4	62.3
OZ 88	41.2	46.6	56.2	63.5	70.6	77.3	78.8	79.2	74.2	64.4	55.8	45.9	62.8
OZ 89	47.7	44.4	55.4	65.3	76.7	77.6	81.0	80.4	71.1	65.0			66.5
OZ ----------													
'88Avg	42.7	47.8	56.2	64.4	71.9	77.5	80.9	80.7	75.0	65.3	53.6	45.1	
'89Avg	43.2	47.5	56.1	64.5	72.4	77.5	80.9	80.7	74.7	65.3	53.6	45.1	

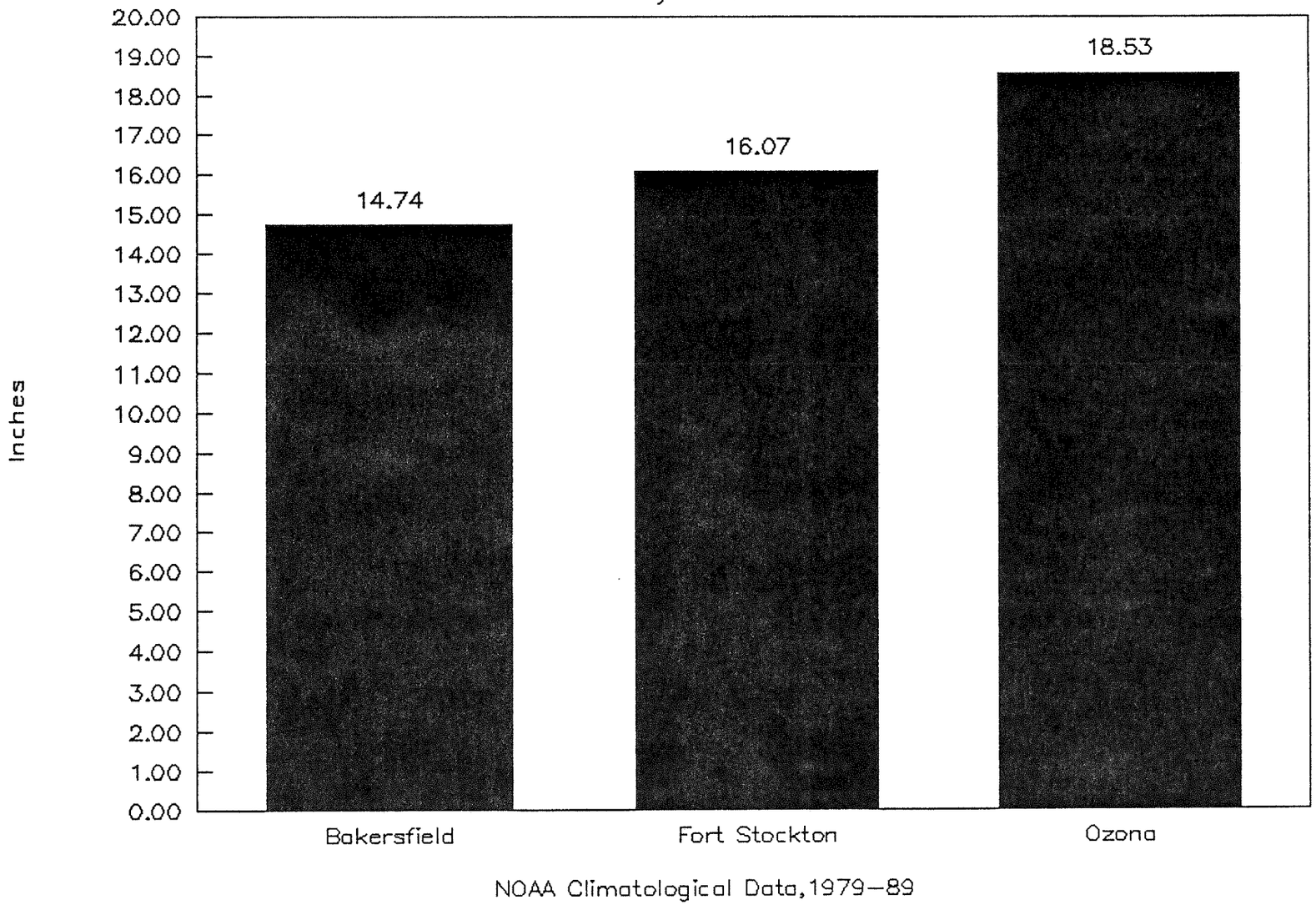
Fort Stockton =FS

StaYr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
FS 79	39.4	46.6	54.6	64.2	69.5	75.0	81.9	78.2	73.1	69.1	50.5	46.4	62.4
FS 80	47.2	49.0	55.9	61.6	72.0	85.5	86.2	81.3	74.5	60.8	48.8	49.2	64.3
FS 81	45.6	50.2	52.4	65.4	70.6	78.7	82.6	77.7	75.4	65.3	56.8	50.5	64.3
FS 82	48.1	49.9	59.8	67.6	71.5	78.0	81.4	81.2	78.4	65.8	52.5	44.2	64.9
FS 83	41.5	50.3	55.4	62.5	73.8	77.7	79.8	79.7	77.6	67.6	56.6	41.7	63.7
FS 84	40.4	50.7	57.2	63.7				81.7	74.7	63.6	56.1	50.8	59.9
FS 85	40.6	45.5	60.5	68.6	76.0	79.3	81.7	83.9	76.7	65.8	60.0	45.8	65.4
FS 86	49.2	54.4	61.7	72.0	74.4	79.6	83.0	80.7	76.0	63.5	53.4	45.7	66.1
FS 87	45.8	49.6	52.2	59.8	70.4	77.8	81.4	82.3	74.4	67.6	54.5	46.9	63.6
FS 88	42.6	49.3	56.9	65.9	72.3	79.8	81.2	80.6	75.6	67.1	58.1	46.4	64.7
FS 89	48.0	48.3	59.4	68.9	78.3	81.3	83.9	81.3	73.4	67.9			69.1
FS ----------													
'88Avg	44.0	49.6	56.7	65.1	72.3	79.0	82.1	80.7	75.6	65.6	54.7	46.8	
'89Avg	44.4	49.4	56.9	65.5	72.9	79.3	82.3	80.8	75.4	65.8	54.7	46.8	

Source:National Oceanic and Atmospheric Administration's
Climatological Data Annual Summary,1979-1988 and Climatological Data,
[illegible] October 1989

Average Annual Rainfall, 1979–89

By Station



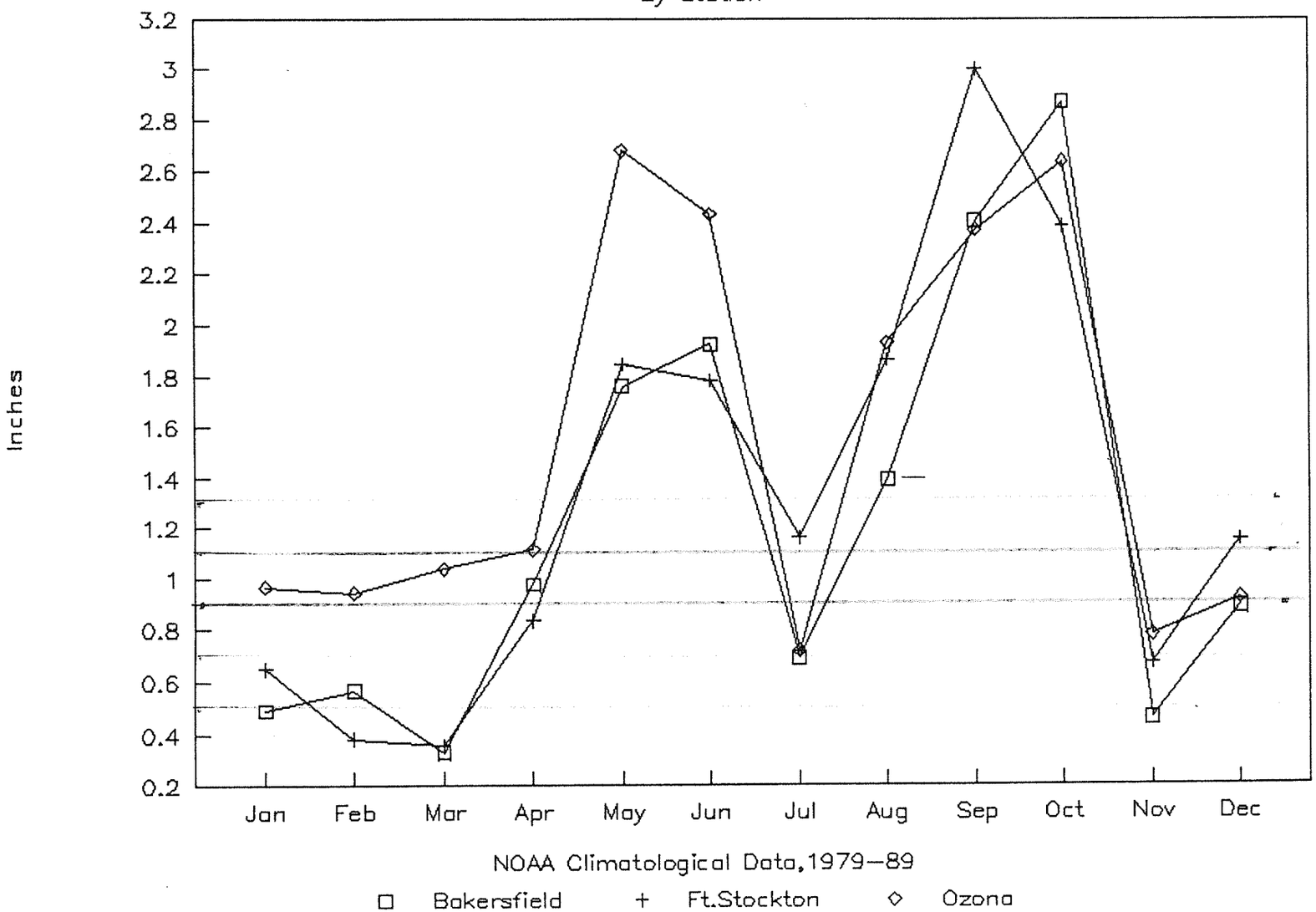
NOAA Climatological Data, 1979–89

Annual : 12.8

Growing Season : .95

Average Monthly Rainfall, 1979–89

By Station



Average Monthly Temperature, 1979–89

By Station