

DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

The Director,
National Park Service,
Washington, D. C.



515 Custom House,
Denver, Colorado,
April 3, 1933.

Dear Mr. Director:

On January 18, 1933, I visited the proposed Sand Hills National Monument, California, in company with Mr. Robert Hays, Secretary of the El Centro Chamber of Commerce.

These Sand Hills are located in Imperial County, California, and are sometimes referred to as the Salton Basin sand dunes. They are from three to six miles in width for most of their length, but taper to a narrow width at the northern end. They are forty miles in length. Assuming an average width of three and one-half miles, the Sand Hills cover an area of approximately 140 square miles. They extend some three or four miles into Mexico. It is proposed to establish as a national monument the southern portion of these dunes, approximately that portion lying within Township 19 and 20 East, Range 16 South.

The Sand Hills are crossed by U. S. Highway 80 and are, therefore, readily accessible and are seen by many thousands of motorists every year. The travel during the winter months is particularly heavy since climatic conditions are then most favorable in this region.

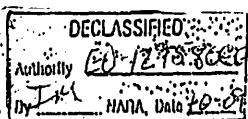
Two national monuments have already been established comprising the outstanding sand dune areas of the United States. These are the Great Sand Dunes of the San Luis Valley, Colorado, which are believed to be the highest and most spectacular dunes in the country, and the White Sands of New Mexico, which are a part of what are believed to be the largest dunes of the United States and are unique in composition, since the dunes are ninety-five per cent pure gypsum.

The Sand Hills are the outstanding sand dunes of California, but it is believed that they do not present any outstanding feature not contained in the two existing national monuments, but would constitute a duplication of some of the features of these other areas.

It is believed that the Sand Hills would qualify for consideration by the State Park Commission.

Very truly yours,

Roger W. Toll
Roger W. Toll



DECLASSIFIED
Authority
By
DATE
12/27/83
HANA, DAN, YC

Location and Boundaries

The Sand Hills are located at the eastern edge of the Imperial Valley. U. S. Highway 80 crosses the Sand Hills between El Centro, California, and Yuma, Arizona. The distance between these two places is about 84 miles. The west edge of the dunes is about 41 miles from El Centro, and the east edge of the dunes is about 19 miles from Yuma. The distance by road across the dunes is 3.5 miles.

The area proposed as a national monument is the southern portion of the Sand Hills in the United States, or that portion contained in Range 13 South. This range adjoins the Mexican boundary line.

The proposal is flexible and any suitable boundaries could be selected since practically all of the Sand Hill area is public domain, except for the usual state sections. It is proposed not to include within the area any land that is suitable for cultivation, since the All-American Canal will make it possible to irrigate the valley land right up to the western edge of the Sand Hills.

In selecting the most desirable boundaries for a reservation in the Sand Hills, it would probably be desirable to eliminate the right-of-way for the highway, the power line and the proposed All-American Canal with the railroad track that will be located along the canal. It is true that the All-American Canal will be a feature of public interest, but it is not desirable to include it within the boundaries of an area that is intended for preservation in its natural condition. The railroad track may become a main line of the Southern Pacific.

The recreational use of the Sand Hills is not very great. All visitors are interested in seeing them from their automobiles. Some visitors stop and enjoy the novel experiences that are offered by climbing up or sliding down the dunes. The recreational use is practically limited to a narrow belt close to the highway, and for that reason the boundaries should run to the highway right-of-way on one or both sides.

There are probably some scientific values that would be served by a large area better than by a small one, but the recreational use would not be much affected by the size of the area.



Sand Hills, California.



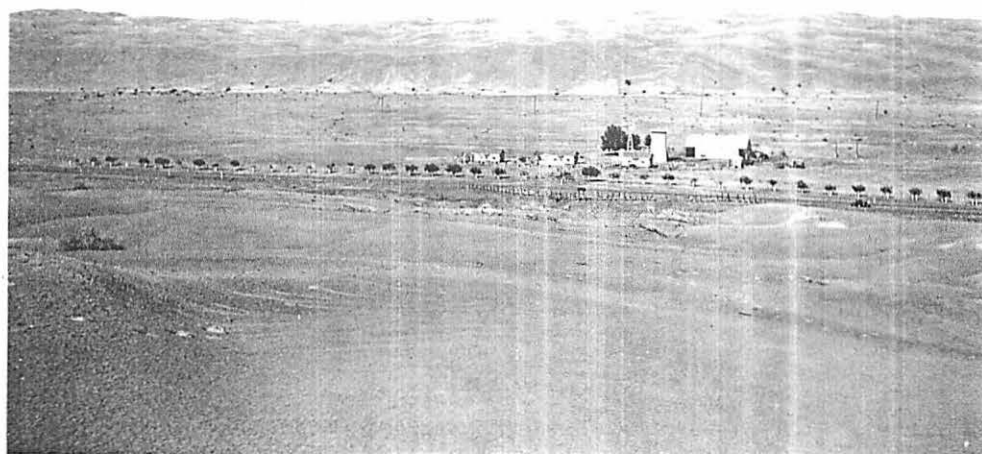
PWT

Sand Hills, California.

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By: JSA
HAWAII, Date: 12-1-01



Part of the ruins of the Beau Geste movie structures.



Highway maintenance camp on U.S. 60. The full height of the dunes shows beyond this valley which penetrates the Sand Hills.

Part.

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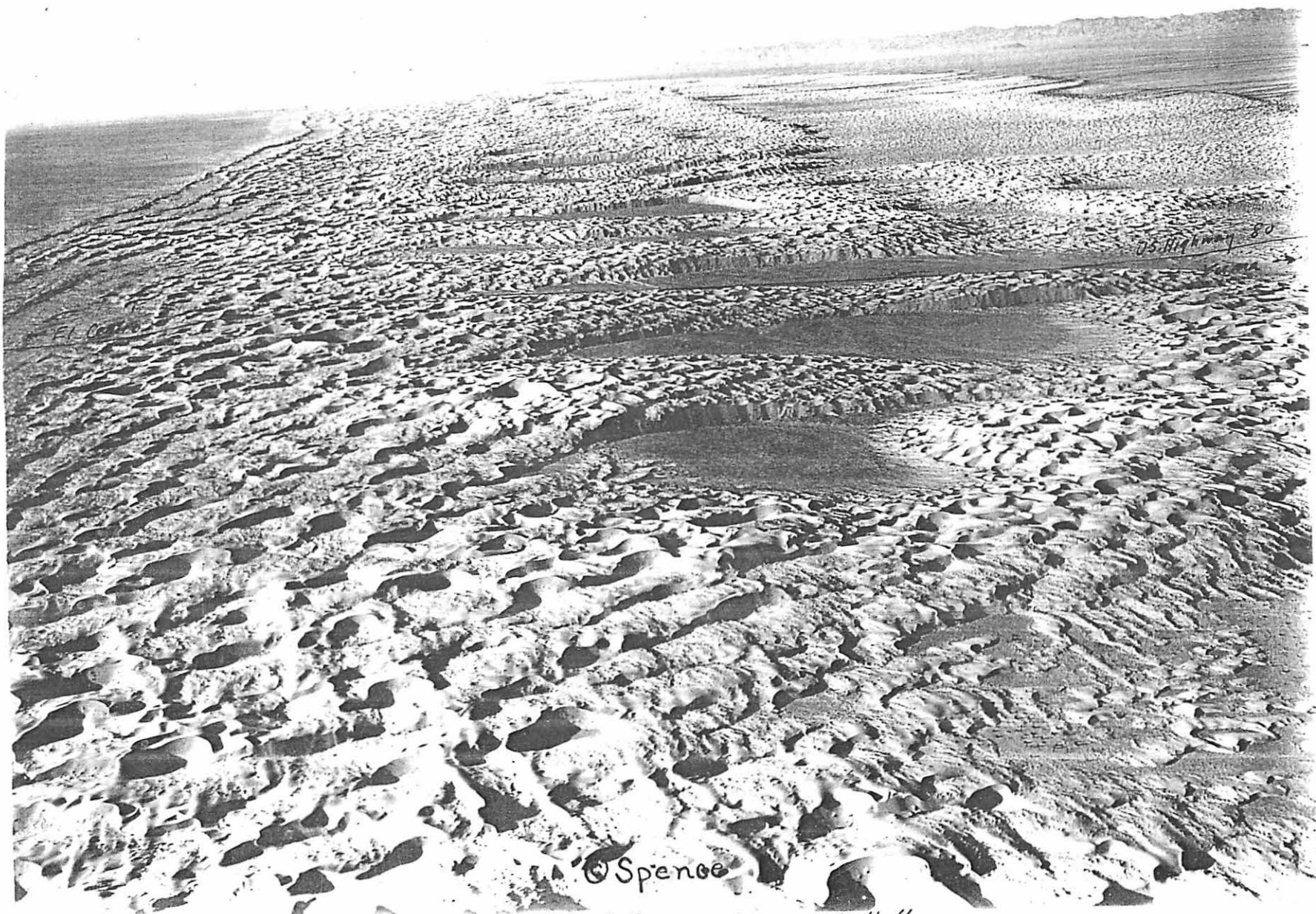


Highway U. S. 80 winding across the dunes. Looking east, toward Yuma.



Showing old abandoned road formerly in use. U. S. 80 at the right. Power line at the left.

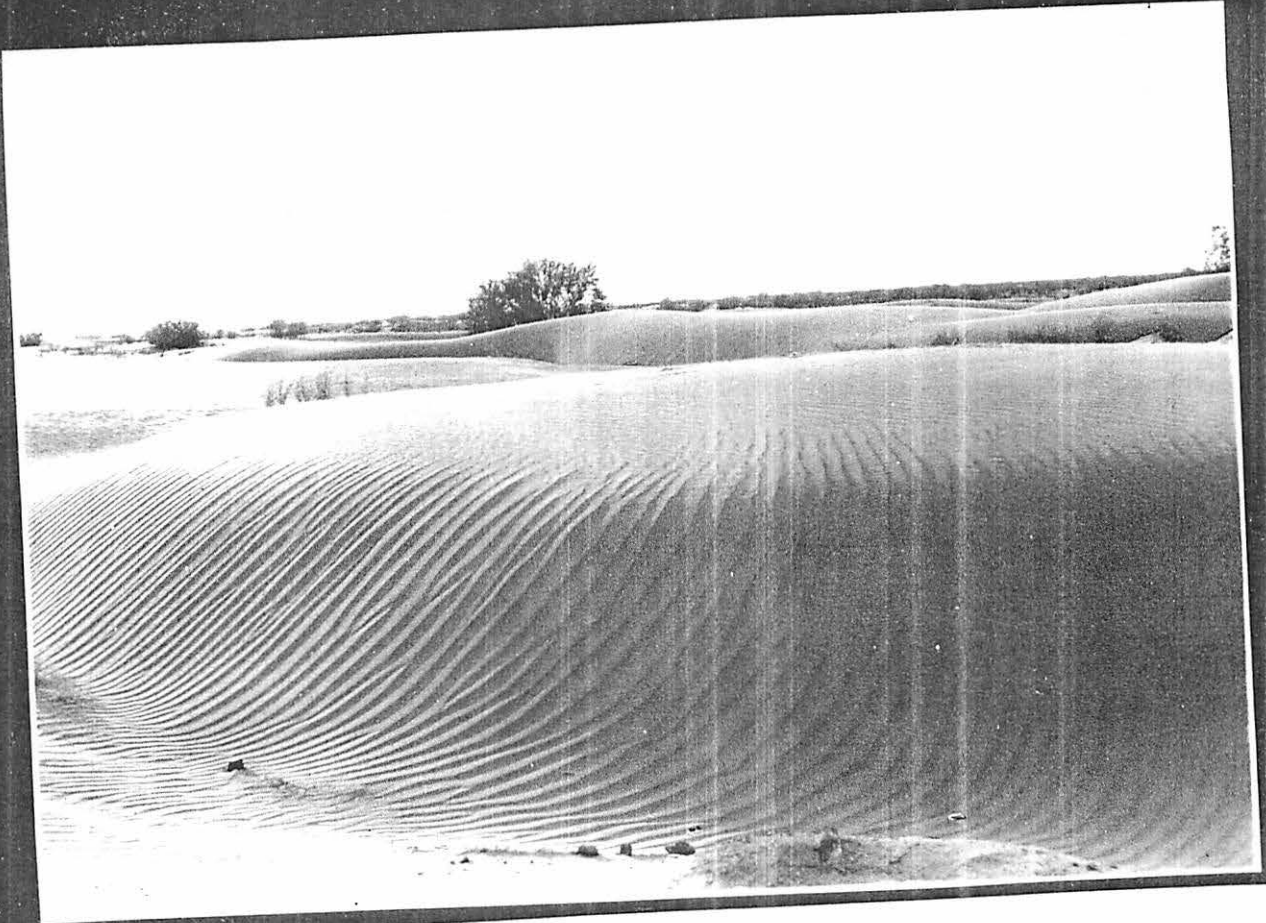
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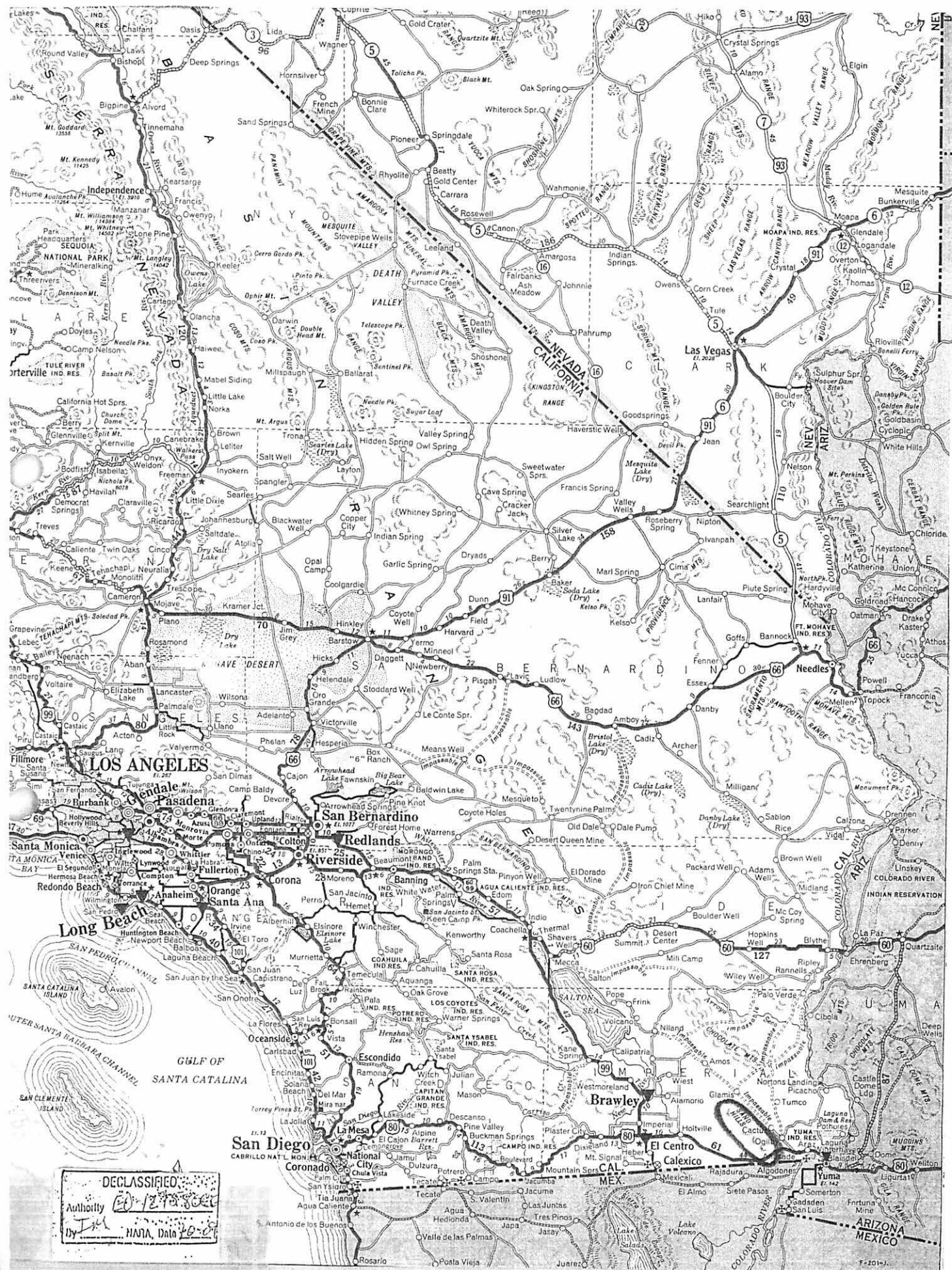


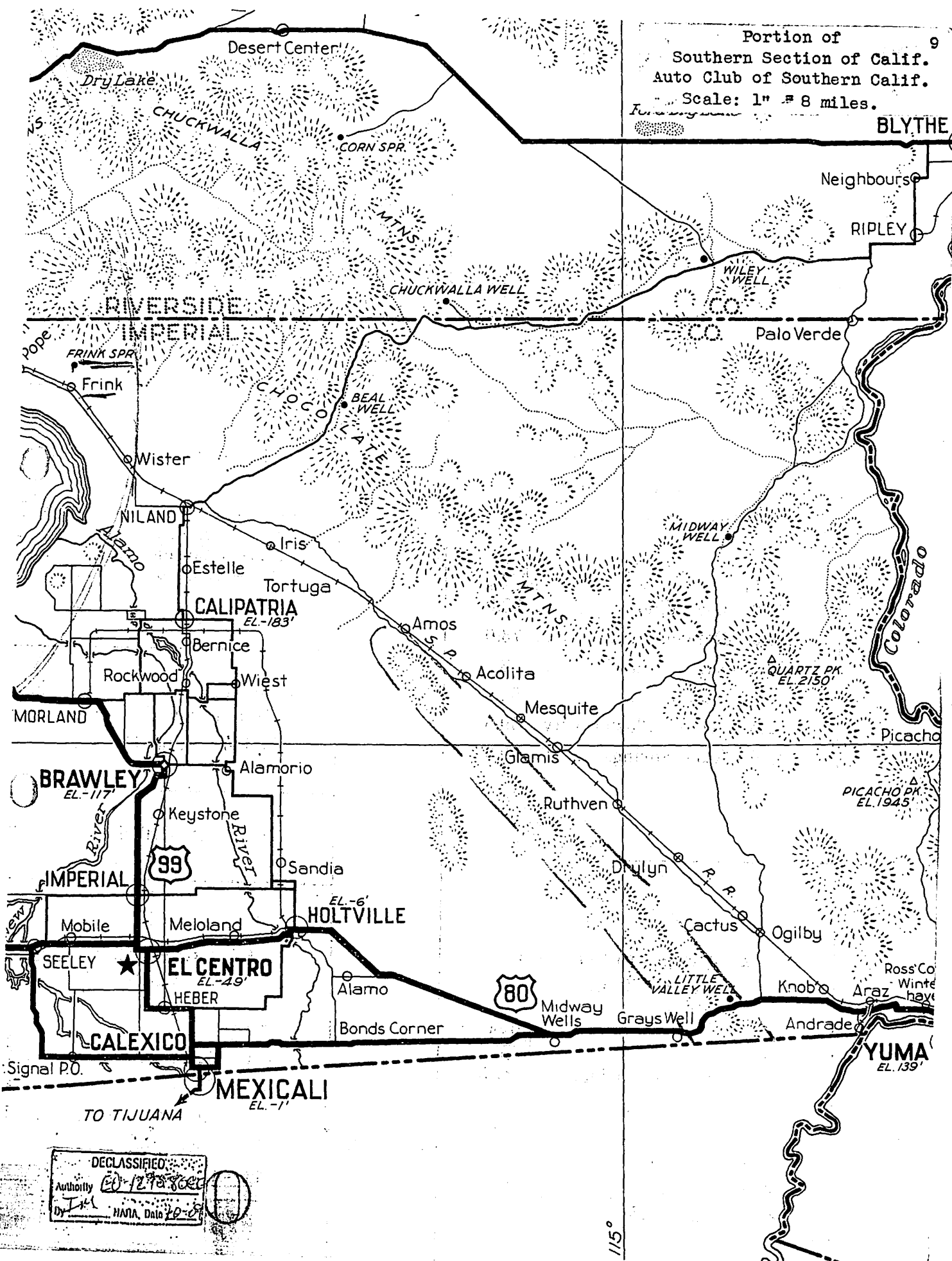
© Spence

Sand Dunes, Imperial Valley

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By J-1
NADA Date 1-6-68

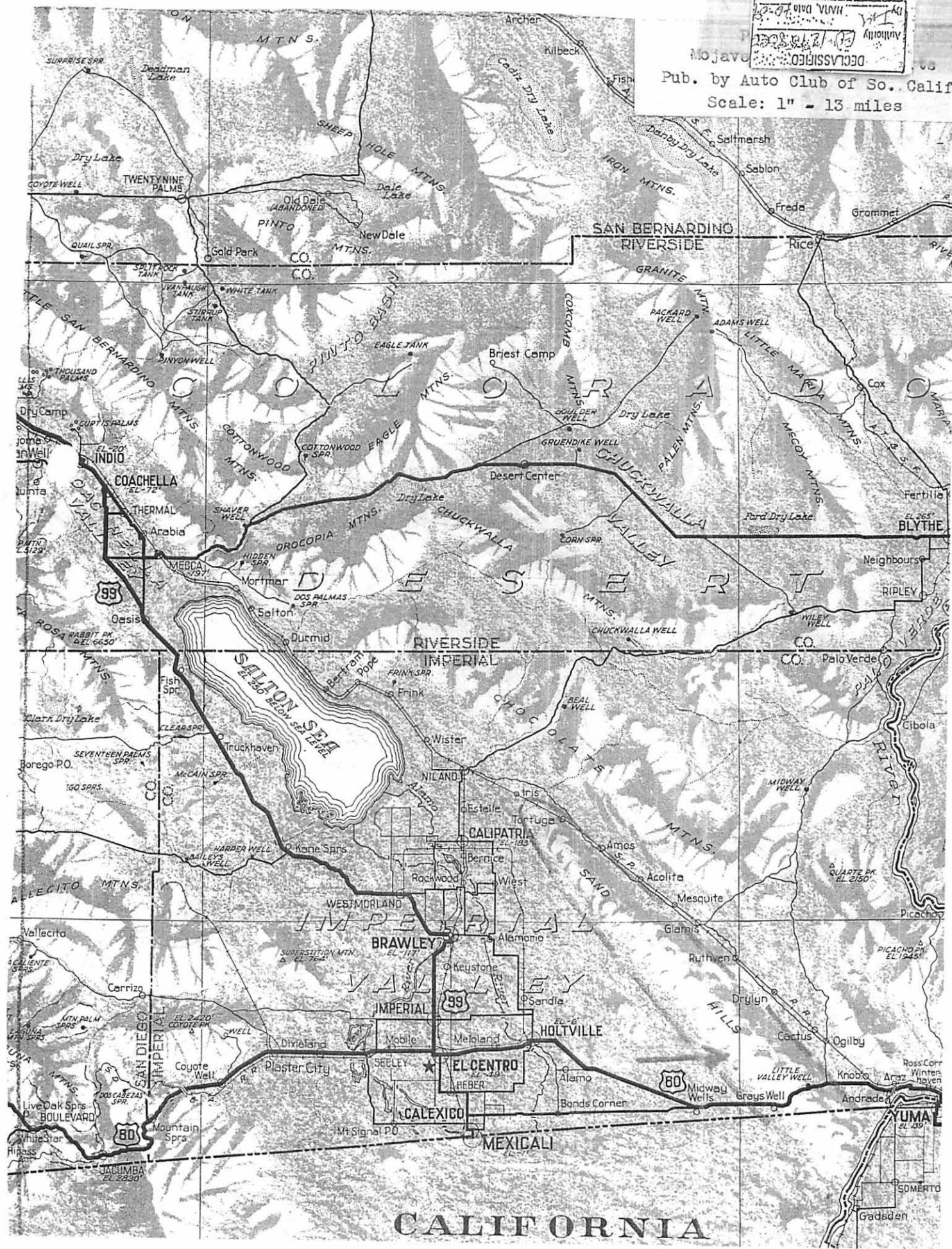






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2025/12/17
BY 1043

Mojave
Pub. by Auto Club of So. Calif.
Scale: 1" = 13 miles



CALIFORNIA

General Character

The best data regarding the height of the dunes is contained on the U.S.G.S. map of the Holtville Quadrangle, which shows contours with a twenty foot interval. The area covered by this map is north-west of the area under consideration and there is no equally detailed topographic map of the area under consideration.

The Holtville Quadrangle shows the elevation of the western edge of the dunes as 140 to 160 feet, the elevation of the eastern edge of the dunes as 360 to 380 feet, and the maximum elevation of the dunes (within the area shown) as 580 feet. This indicates that the plain, upon which the dunes rest, rises some 200 feet from the west to the east side of the dunes. The highest dune is 440 feet above the eastern edge, and more than three miles distant from that edge. In general the highest of the dunes rise from 200 to perhaps 300 feet above their immediate base. The U.S.G.S. map of the Salton Sink, which includes the area under consideration, is less satisfactory in indicating the elevation of the dunes.

The dunes in the Great Sand Dunes National Monument are considerably higher and probably reach a maximum elevation of a thousand feet above the valley floor. The greater height is due to the location of the dunes at the foot of the Sangre de Cristo range, which results in air currents favorable to the formation of high dunes.

The accompanying airplane photograph by Spence is exceptionally fine and shows the general character of the Sand Hills. U. S. Highway 80 is also shown crossing the dunes. This photograph was furnished by the El Centro Chamber of Commerce.

The Sand Hills have been used as a location for filming a number of motion pictures, including "Beau Geste".

The sand is fairly uniform in size, and composed of fine grains. In color it is a tan or light brown.

The dunes are said to be shifting easterly about two feet a year.

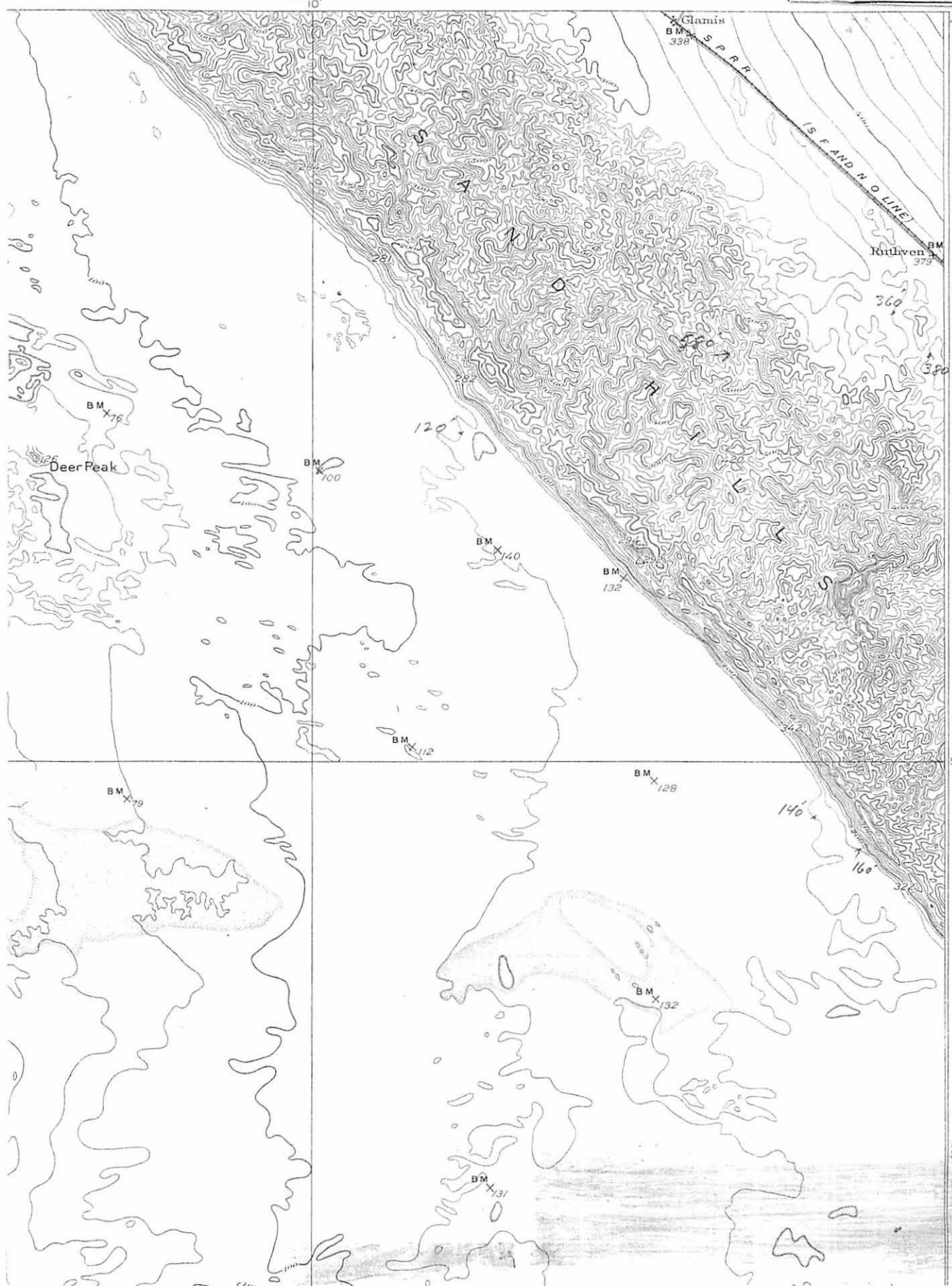
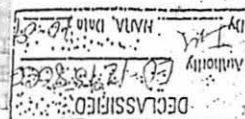
Much difficulty was encountered in building the first road across the Sand Hills and a planked roadway was constructed in 1915, which is shown in an accompanying photograph. The accompanying article by Ben Blow, from the National Motorist for December, 1931, gives interesting data regarding this planked road and also regarding the construction of the present road which was opened in 1925.



RAPHY

DEPARTMENT OF THE INTERIOR
FRANKLIN K. LANE, SECRETARY
U.S. GEOLOGICAL SURVEY

(IMPERIAL VALLEY)
HOLTVILLE



A pamphlet published by the Associated Chambers of Commerce of Imperial County, entitled "Scenic Wonders of Imperial County" gives the following description of the Sand Hills:

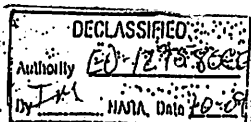
"Imperial Sandhills. Sands of Arabia - sweeping, immense, awesome - the great sand dunes which line the eastern side of Imperial Valley are the Mecca of artists, moving picture companies, and sight-seeing tourists.

"There is a romantic quality about the graceful sweep of the horizon, the soft swish of a dry breeze, the peaked hills with razor sharp ridges and steep sloping sides. It would require a stony heart to resist the charm of the dunes on a balmy evening when the air is peaceful and the sand lies in ripples, whitecaps, and waves as far as the eye can see.

"The U.S. highway 80 crosses the dunes near the international line. First crossed in May, 1915, with a plank road, remnants of which may still be seen, the crossing may now be made on a wide concrete highway which was completed in 1926."

P.S. Water Supply Paper 225, "Ground Waters of the Indio Region, California; with a sketch of the Colorado Desert", pub. 1909, contains a reference to the Sand Hills, (pages 26-28). Also a photograph.

Water Supply Paper 497, "The Salton Sea Region, California, a geographic, geologic and hydrologic reconnaissance" by John S. Brown, 1923, contains references to the Sand Hills on pages 28-29, 32, 208, 218-219.



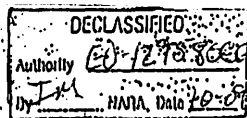
Other Data

All-American Canal. At present the canal that supplies the Imperial Valley with water for irrigation, has its intake on the Colorado River below Yuma, and then runs on the Mexican side of the international boundary until the Imperial Valley is reached. It is planned to construct a new canal that will be entirely within the United States. This canal will cross the Sand Hills in the vicinity of the highway crossing. The crossing will be made by an open cut which will be of considerable depth through a part of the dunes. This All-American Canal will cost from thirty to forty million dollars. It is expected that Congress will make the initial appropriation to start this work in the near future. The following map, prepared by the Reclamation Service, shows the present Imperial Irrigation District, the location of the proposed All-American Canal and the additional lands that can be irrigated.

Abandoned Placer. The ghost town of Tumco is some eight miles to the north of the highway and on the east side of the dunes. It is in one of the largest areas of placer workings in the world, and was famous in its day but the operations are now abandoned.

Salton Sea. The northern end of the Sand Hills is about 15 miles east of the Salton Sea. This lake formerly had an elevation of about 270 feet below sea level. In 1905 the Colorado River broke through the levees (in Mexico) and ran into the Salton Basin for more than a year. In April, 1907, the lake was 198 feet below sea level or about 72 feet higher than its previous level. In order to avoid litigation if lands are intermittently flooded, and in order to maintain an adequate area for evaporation of irrigation seepage, the level of Salton Sea is now controlled, by adding surplus water, at an elevation of -246 feet, and only fluctuates about three feet. Salton Sea is about 40 or 45 miles long. The water is said to contain nine per cent mineral salts, compared with six per cent in ocean water.

Ancient Beach. The line of an ancient beach may be traced on both the east and west sides of the Salton Sea at an elevation of from 40 to 50 feet above sea level.



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IRRIGABLE AREAS AS ESTIMATED BY IMPERIAL IRRIGATION DISTRICT

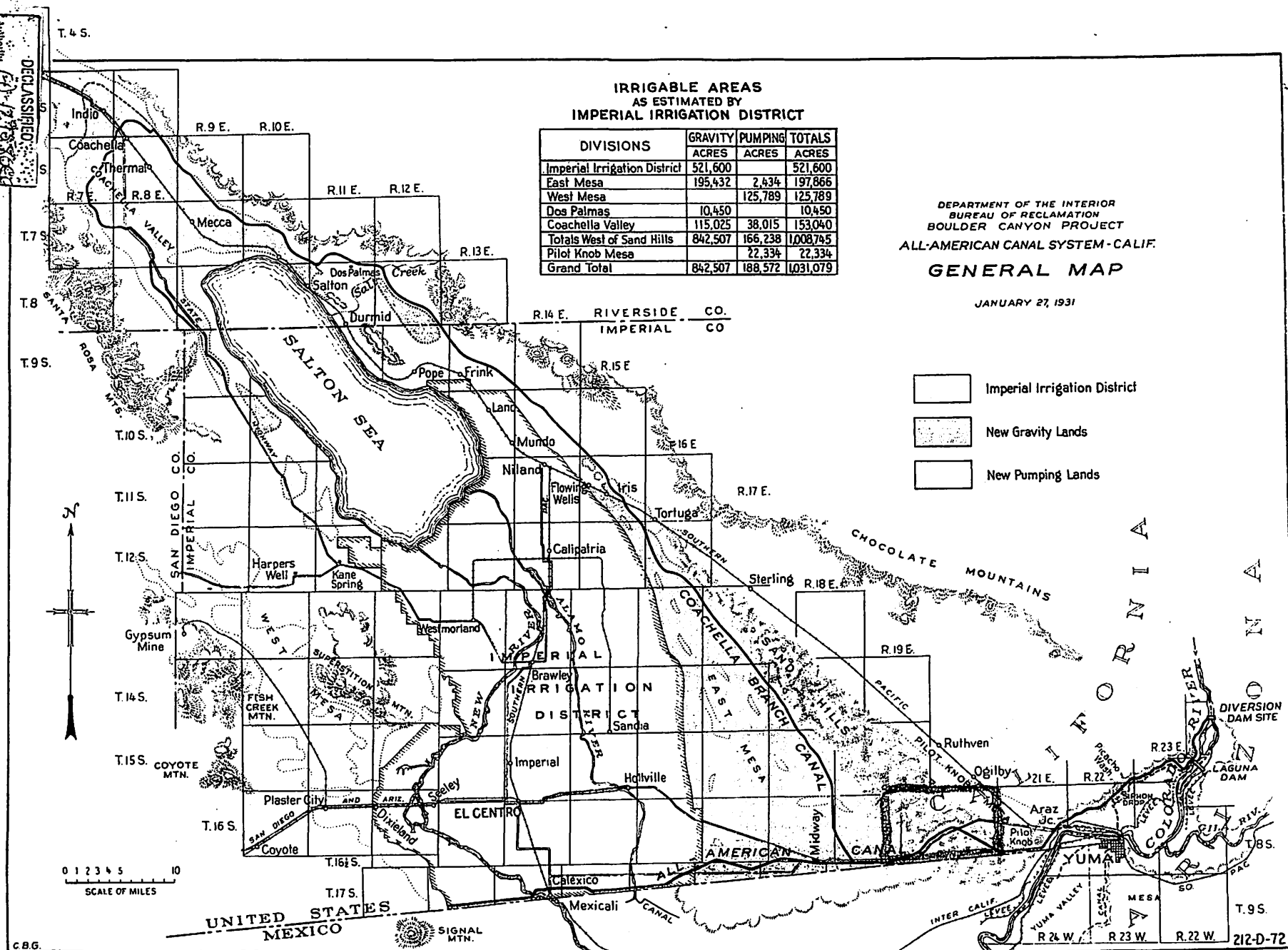
DIVISIONS	GRAVITY ACRES	PUMPING ACRES	TOTALS ACRES
Imperial Irrigation District	521,600		521,600
East Mesa	195,432	2,634	197,866
West Mesa		125,789	125,789
Dos Palmas	10,450		10,450
Coachella Valley	115,025	38,015	153,040
Totals West of Sand Hills	842,507	166,238	1,008,745
Pilot Knob Mesa		22,334	22,334
Grand Total	842,507	188,572	1,031,079

DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
BOULDER CANYON PROJECT
ALL-AMERICAN CANAL SYSTEM - CALIF.

GENERAL MAP

JANUARY 27, 1931

- Imperial Irrigation District
- New Gravity Lands
- New Pumping Lands

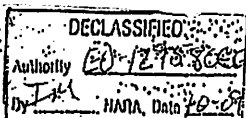


Other Sand Dunes in the United States

1. The White Sands National Monument is outstanding because it is composed of ninety-five per cent pure gypsum sand, and also because the dunes are, I believe, the most extensive in the United States. The gypsum dunes cover some 260 square miles, not including the northerly extension of the dunes where the material is sand rather than gypsum.
2. The Great Sand Dunes National Monument comprises the highest and, I believe, most spectacular sand dunes in the United States. Their elevation probably reaches a maximum of a thousand feet above the floor of the valley. These dunes are some 25 square miles in area.
3. The Sand Hills are probably the next most important sand dunes in the United States. As stated, the area of these dunes is about 140 square miles, and the height of the dunes about 300 feet.
4. The Death Valley National Monument contains comparatively small but picturesque sand dunes a mile or two east of Stovepipe Wells Hotel. These dunes have an area of 10 or 15 square miles and a height of about 200 feet.
5. The Devils Playground is a few miles east and a little south of Crucero, California. The dunes lie on the south of the Union Pacific track, at a distance of a mile or two. They are some ten miles in length and of considerable height.
6. There is a prominent sand dune area to the west of Dumont, a station on the Tonopah and Tidewater Railroad, between Crucero and Death Valley Junction.
7. There is an area of sand dunes in the northern end of Panamint Valley, west of Death Valley National Monument.
8. The "Big Dune", as it is named on the map, is located in Nevada between Death Valley Junction and Beatty. It is from 200 to 250 feet in height.
9. There are some picturesque sand dunes in the Coachella Valley, east of Palm Springs.
10. The "Singing Sands" are dunes north of Salt Springs, Nevada.
11. Part of the well known sand dunes south of Lake Michigan are included in the state park system of Indiana.



"The Mojave Desert Region, California", by David G. Thompson, U.S. Geological Survey Water Supply Paper 578, published by the Government Printing Office, 1929, gives data regarding some of the above sand dunes and also refers to additional dune areas.



Itinerary

January 18, 1933. 8.55 a.m. (cyclometer 8817) Left El Centro with Robert Hays.

10.05 (8858.7), reached west edge of Sand Hills.

10.10 (8861.6), highway maintenance camp.
Climbed to the crest of the dunes south of this point.

11.20 (8865.1), reached east edge of Sand Hills. Continued by auto to the Hanlon Heading of the Imperial Canal, then Algodones, Mexico, then Yuma, Arizona.

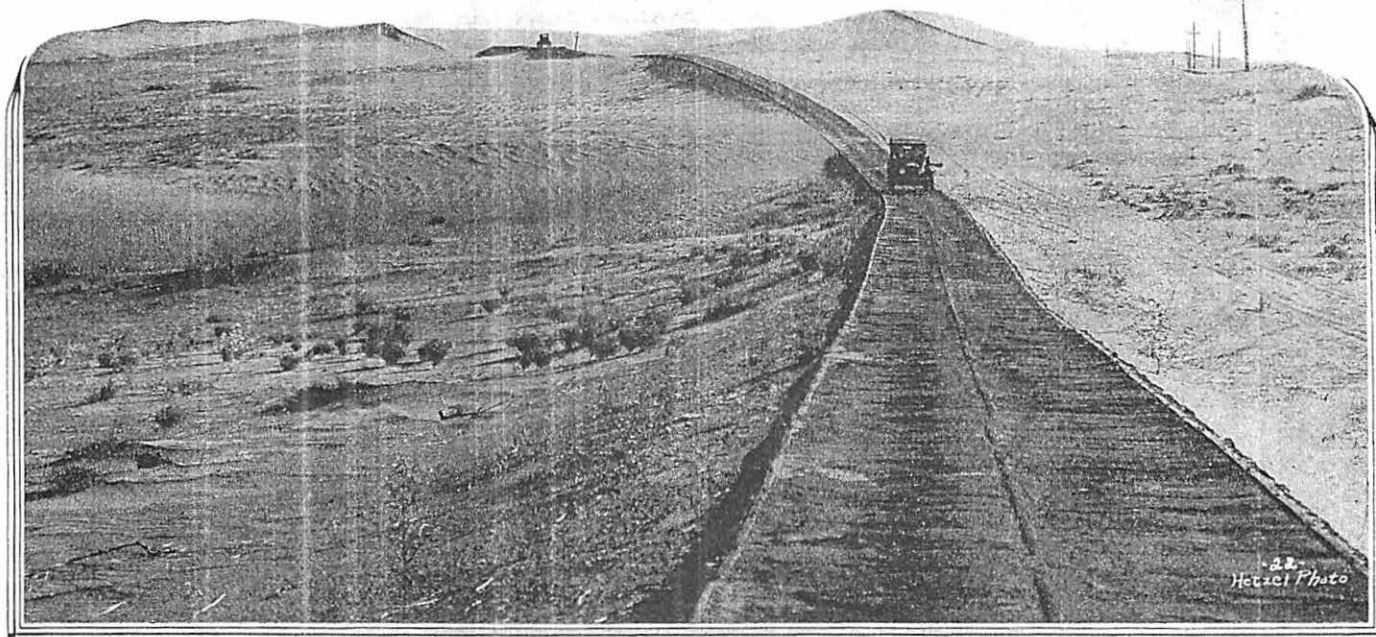
3.00 (8885) Left Yuma.

5.05 (8949) Returned to El Centro.

Mr. Hays was most friendly and helpful, and I am indebted to him for his generous and capable cooperation.

From "National Motorist"
December, 1931.

The Old
Plank Road



California's Highway Across the Sands of Death

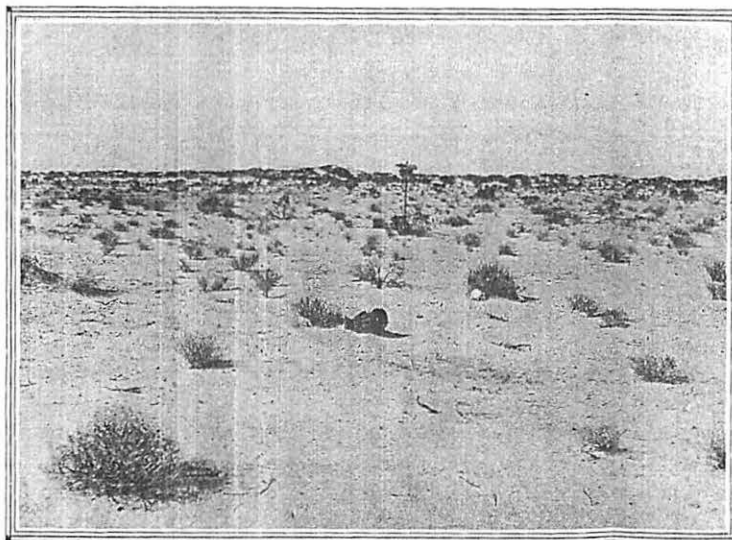
By
BEN BLOW

Field Secretary, National Automobile Club

FOR SO MANY YEARS that the memory of man runneth not to the contrary, the lighter sands of the Salton Sink have been picked up by the prevailing northwest winds, blown to the southeast and piled up into a great windrow of dunes, which stretches for thirty miles from northwest to southeast and spreads out seven miles in width to the south of the Salton Sea. How long it has taken to build up this vast barrier of sand which separates Yuma, Arizona, from the fecund Imperial Valley, no one seems to know beyond declaring that it has "always" been there to try the souls of migrating mankind, passing those through who had strength and adequate water supply; dealing out destruction to the weak and those who dared the crossing, not knowing that an ample water supply for man and beast was the only safeguard against the

That the Yuma dunes were crossed by migrating animals bound from the badlands of the interior to the pleasantly watered foothills which lie back of the San Diego of today is in all probability true; that Indians crossed them, stalked by tragedy, is certain,

for when California's highway engineers were building up the roadbed of the present highway which connects Yuma with El Centro, they found deep buried in the sands many broken ollas telling of a lost water supply and possibly a thirst-crazed struggle against inevitable defeat. Across this interminable waste of sand the early emigrants to California toiled toward the end of the southern route, those who were lured by the gold that set mankind into a frenzied western rush in 1849, or those who, seeing the specter of Civil War hover over their country in the 50's, fled to avoid a struggle which would pit brother against brother in a lifelong bitterness. Those who were strong, who had cattle that were rested, and an ample water supply, got through; those whose cattle were weak or who ran out of water, too often left their bones to bleach beneath the cloudless sky, the skeletons of men and beasts mingling indiscriminately



After a windstorm when the road was blotted out. One of the old "Goodrich" road signs and, nearby, sunbleached human bones.

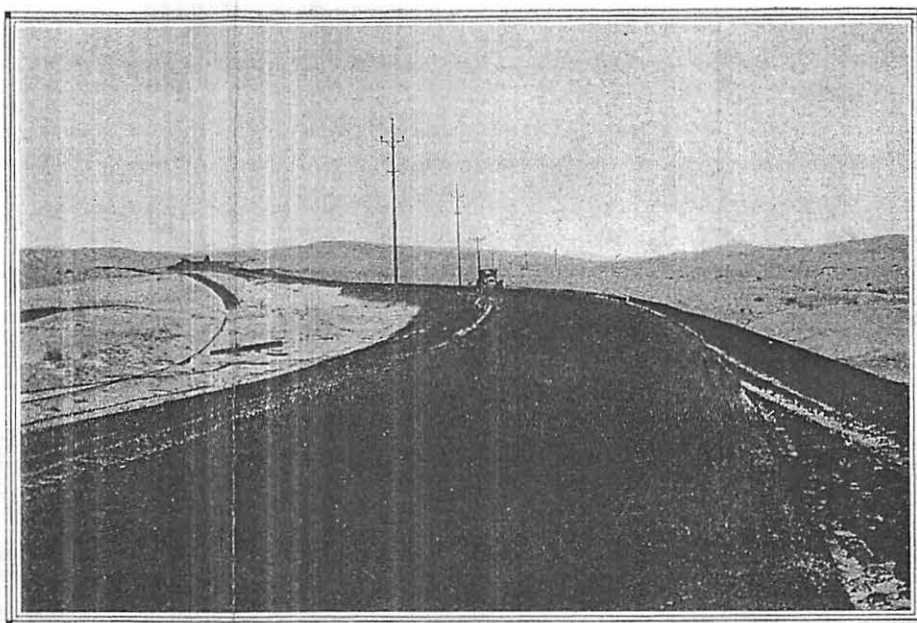
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Authority: 60-1270-800
By: JH
NADA, Date: 10-01

with the wreckage of abandoned wagons which fell apart beneath the pitiless beat of the brazen sun.

That the way across was a torment that tried men's souls is the story of all those who crossed in the early days when the shifting sands, in ten minutes sometimes, wiped out all wagon tracks, and each new caravan, after every blast, faced an uncharted expanse of sand. Where the shifting dunes did not exist, brush piled into the wagon tracks made the going easier and finally a makeshift roadway, built up of brush and whatnot, was developed, changing in this or that section as the moving dunes marched on, over which early day automobiles made the passage, steaming and smoking, when unavoidable necessity demanded a braving of the hardships of the way.

This condition existed up to 1912 or 1913, when Col. Ed. Fletcher of San Diego, then as now, a man who, waking, visioned and sleeping, dreamed of roads, formed a little coterie of San Diegans and vastly circulated around raising money here and there and everywhere, finally getting together enough to buy thirty-six carloads of twelve-inch wide planks with which he proposed boldly to bridge and dare the sands of the creeping dunes. With this lumber and the financial help that he has always been able to command, Colonel Fletcher laid down a roadway which consisted of two parallel planks nailed stoutly to cross boards and so separated that the wheels of the automobiles of the day would track, thus supplying a solid roadbed except in such times as the sand drifted over and obscured them, when the custom was to pick the plank road up and move it, it being built in sections to make this defense against the drifting of the dunes feasible. When some motorist of those early days, aiming his primitive contraption erratically, ran off the edge of the foot-wide track, it was just too bad, for all he could do was to clamber out, shake the sand off his duster, remove his goggles and moan with King Richard III, "A horse! a horse! My kingdom for a horse!" Those who drove across this old plank road of Colonel Fletcher's will remember what a tiresome job it was to steer over the long, long trail of planks which wound

traffic until equine reinforcements appeared. To facilitate the passing of traffic little two-plank turnouts were built out to one side or the other of the plank road and the few motorists who traveled the dunes found that the trip across was a sort of "pussy wants a corner" proceeding, the vehicle nearest the turnout being required to shunt off the main track and make room for the one further away. That this method of procedure did not tend to promote fast travel is well remembered by those who, on occasion, found the traffic so congested that they had to play hide and seek with ten or fifteen automobiles in the seven and one-half mile trip, the time required for the crossing under this adverse



The new road across the sand dunes showing oiled slope. Old plank road to left.

condition being about two hours. "Blow, winds and crack your cheeks," was probably the reflection of Colonel Fletcher, reverting back to Shakespearian readings, when he viewed this first plank road complete in all its undulating glory. And blow the winds did, whereupon the plank road sections where some trespassing dune had squatted were picked up and moved. So persistent was Boreas that the situation finally developed into a sort of checker game between the plank road and the dunes, with one or the other continually in motion.

This condition obtained until 1916, when the California Highway Commission assumed responsibility for the warfare against the sand dunes and built another plank road which was solidly cross-planked to a width of eight feet, built in sections which would permit its removal when need arose, and decorated every half-mile with platforms for turnouts. This second plank road served better than the old one as a roadbed for traffic, but the checker game still continued with the result that the Highway Commission found itself spending about \$35,000 a year to keep the way open while its engi-

neers, assisted by an interested public, tried to develop some feasible engineering plan which would conquer the marching dunes. For quite some time the suggestion that a causeway similar to that four-mile-long structure which connects Sacramento with Davis would solve the problem, received well merited attention until thought was directed to the fact that some of the dunes were 350 feet high and finally, in 1920, Division VIII of the California Highway Commission, with headquarters in San Bernardino, was established and a young highway engineer was brought down from Redding and put in charge to make a study of the dunes. This man, E. Q. Sullivan, coming from the free

water region of Mount Shasta, brought with him no preconceived notions relative to the whys and wherefores of dune movement, and so proceeded to initiate a study of the bibliography of sand dunes in relation to highways, the result being exactly nothing except that in the Sahara desert he found that the answer was camels. No whit discouraged, he began *de novo* and proceeded along engineering lines, sending young men down into the torrid sand section with surveying instruments and ample supplies of extra long surveyor's

stakes with instructions to plat the area and so stake the more active dunes that their crest movement could be accurately measured after any particular windstorm the while they kept an accurate record of that point of the compass from which the wind came, its duration and velocity.

During the two-year period when Mr. Sullivan was studying the dunes, aided by the carefully placed surveyor's stakes and the sweating young surveyors, he led a rather active life of travel between his office in San Bernardino and the sand dune area, traveling post haste down to the dunes when the wind blew and returning equally post haste back to his office with whatever engineering information he had acquired to wiggle around the wavy lines which marked the dune crests on his beloved charts. Exalted by what he was finding out he reconciled himself to a sandy sort of existence for a good part of the time, thinking sand, breathing sand and dreaming sand until he finally had the rate of progress of practically every one of that vast collection of dunes accurately measured and this was what he

[CONCLUDED ON PAGE 18]

California's Highway Across the Sands of Death

[CONTINUED FROM PAGE 8]

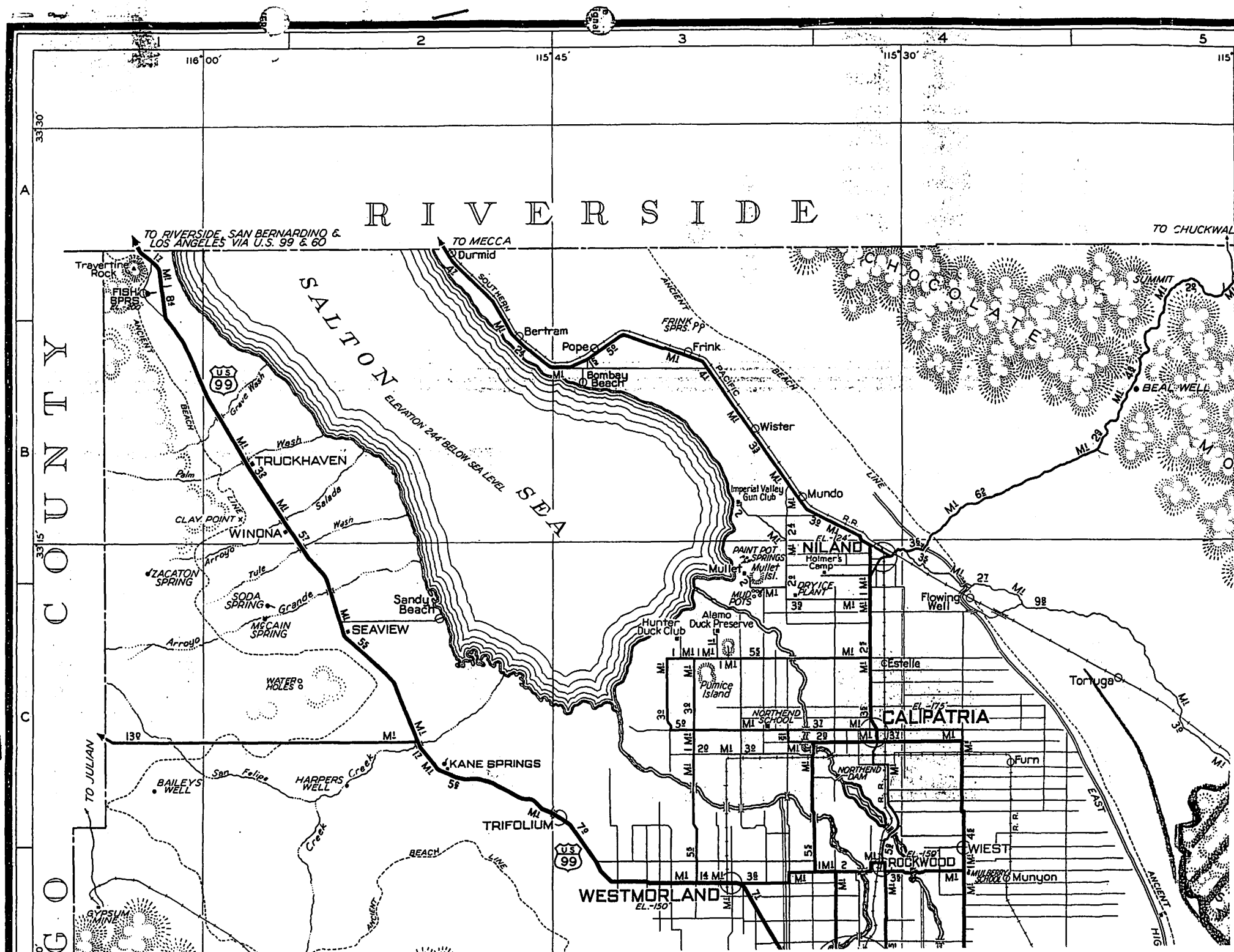
ound: that the main disturbers of the highway peace in the sand hills were not the larger dunes. These he had succeeded in moving by his two-year study moved only about one inch per year, blow high, blow low. As for the smaller dunes he found them something like fleas, that the smaller they were the faster they moved, those up to thirty-five feet in height being the main disturbers of the peace, the rate of progress of a ten-foot high dune, for instance, being fully 100 feet an hour under the drive of a high wind.

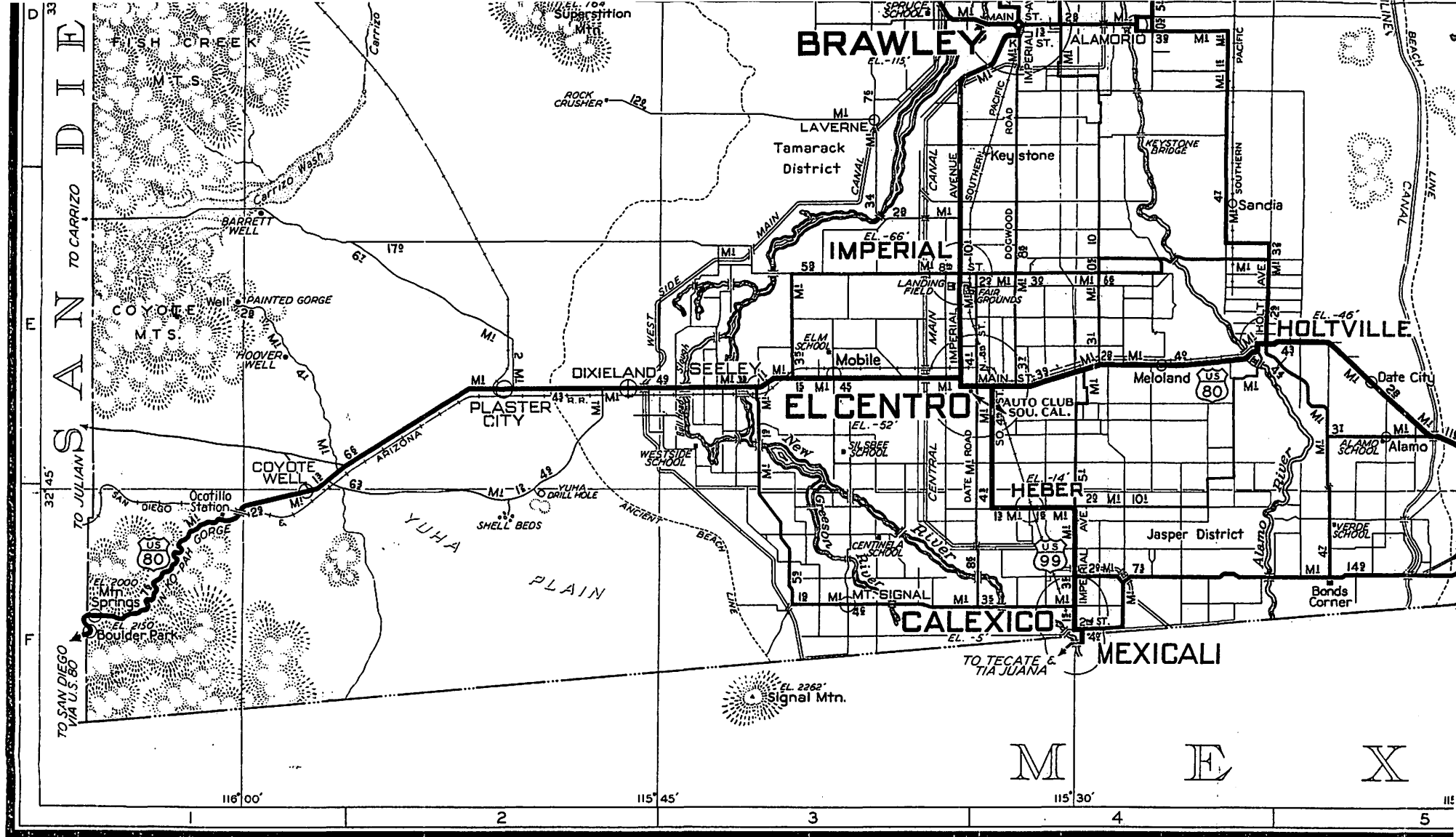
Collateral to this field study of the dunes he had constructed at his headquarters in San Bernardino a wind tunnel, similar to those now used in studying airplane models, and trucked a load of sand from the seat of trouble, establishing a sort of sand dune incubator where, with the aid of powerful electric blowers, he could manufacture miniature dunes of his own and make them move about when Boreas denied him that privilege in the area below the Salton Sea. With data thus accumulated and fortified by an imposing plat of the sand dunes whereon, in those wavy lines that topographers love, he had recorded the vagrant wanderings of the sand hills, he convinced the Highway Commission that the answer to the problem they had given him was to build the road up, in those sections where the sand hills were prone to wander, to a height of thirty-five feet, using the thirty-five-foot high dunes as part of the plan, his findings proving that dunes over that height moved so slowly as to give little trouble if the proposed new road was carefully located. He further suggested such a slope for the embankment as would, when properly treated with a binding oil surface, permit the smaller dunes to march up to the highway level and over it

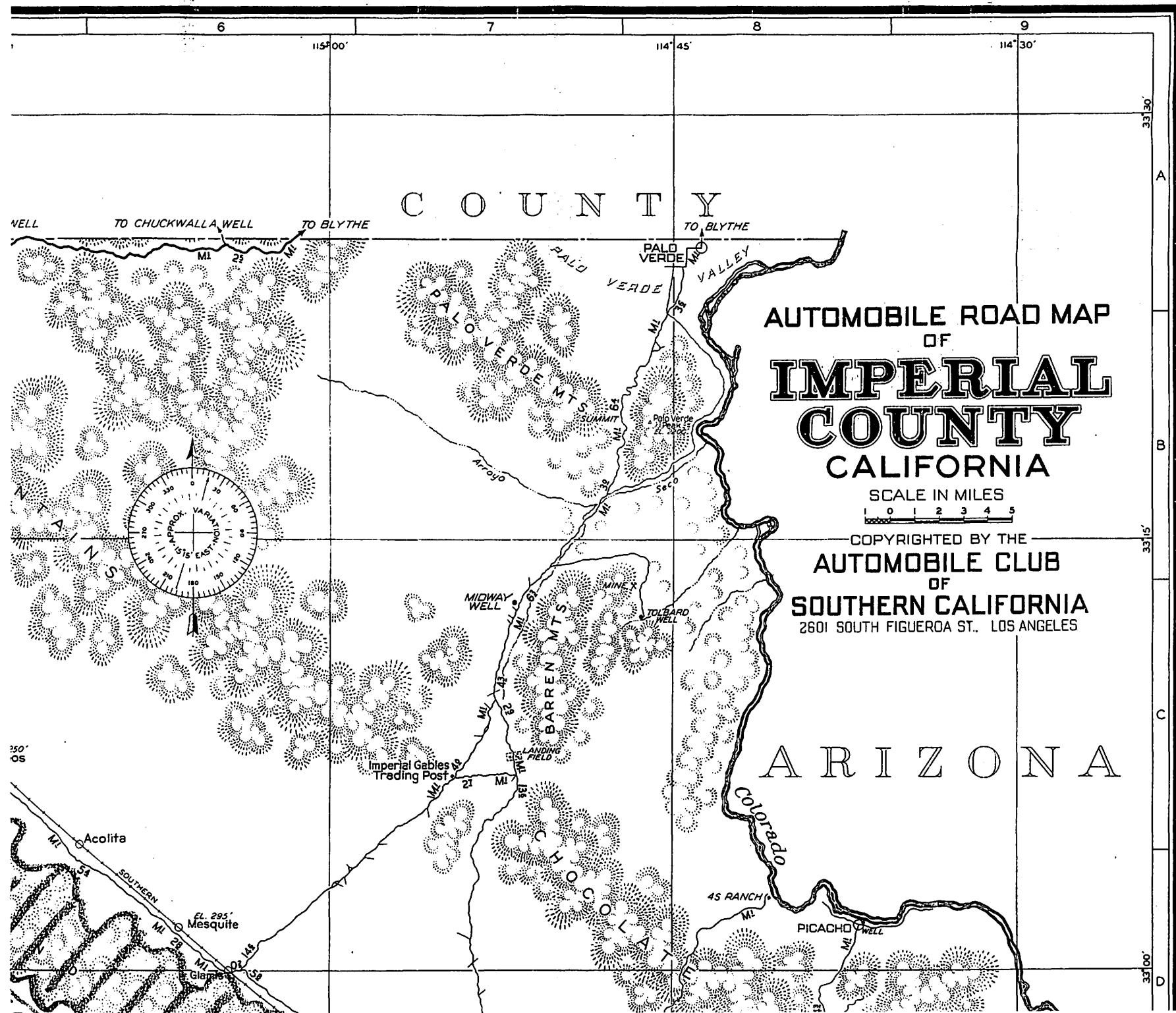
with a minimum of effort, leaving no sand behind.

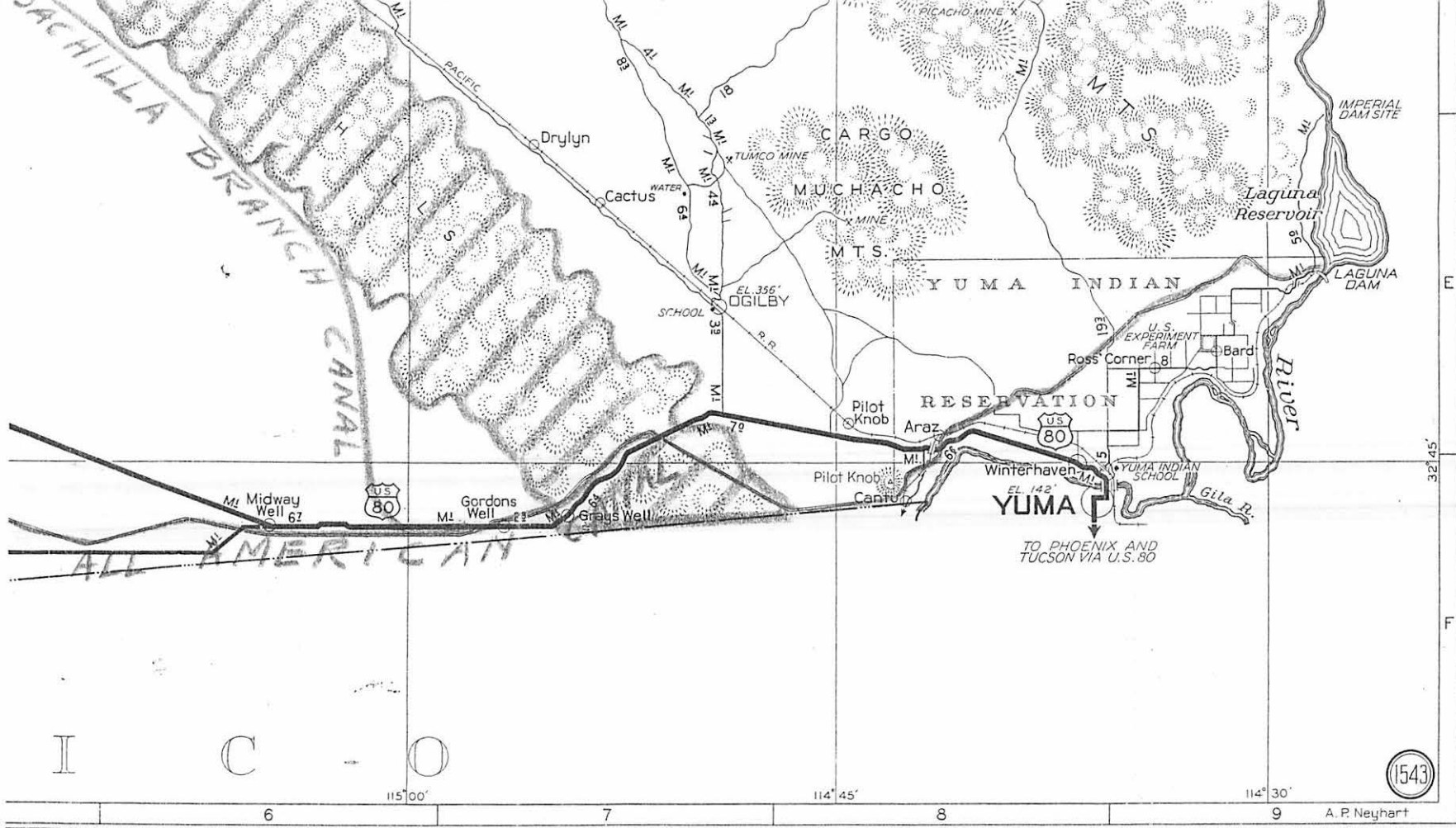
Fortified by the okey of his superior officers, Mr. Sullivan gathered a battery of steam shovels and proceeded to pile up the present fine roadbed, wetting the sand down thoroughly when the asphaltic concrete surface was ready to be laid, finding many a broken olla in the steam shovel buckets to tell of that infinite tragedy which takes place when the atom, man, dares the desert lacking water to quench his thirst. That the decision of the California Highway Commission to adopt the recommendations of the engineer they had charged with studying the dunes was a wise one is proven by the fact that since the new road was opened up for traffic on February 28, 1925, it has never been closed in spite of sand storms so violent that the windshields of automobiles caught therein are sand-blasted and made opaque, while the enamel is stripped down to the bare metal by the cutting power of the wind-blown sand.

Such is the history of the conquering of the sand dunes of that region between Yuma, Arizona, and El Centro, where the sands from the Salton Sea, blown about for ages, have raised a barrier of dunes which barred back travel for years untold from the East to the West, and sent many a man who dared the burn of the sun to struggle on toward El Dorado only to find a heat crazed death. Today the road across the dunes is never closed and the distance of twenty-two miles between Holtville and Yuma is a matter of less than half an hour over a fine wide highway which, in places, lies close to the old plank road built in 1916, which served well in its time but now, in its abandonment, suggests strangely the cast-off skin of some vast and prehistoric snake.









10-23a

1543

A. P. Neyhart