Reconnoissance Soil Survey of the Central Southern Area, California

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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF SOILS,
Washington, D. C., July 20, 1920.

SIR: During the field season of 1917 a reconnoissance soil survey was made of the Central Southern California area. This work was done in cooperation with the University of California Agricultural Experiment Station.

I have the honor to transmit herewith the manuscript report and map covering this area and to recommend their publication as advance sheets of Field Operations of the Bureau of Soils for 1917, as provided by law.

Respectfully,

MILTON WHITNEY,
Chief of Bureau.

Hon. E. T. MEREDITH,
Secretary of Agriculture.

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RECONNOISSANCE SOIL SURVEY OF THE CENTRAL SOUTHERN AREA, CALIFORNIA.

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DESCRIPTION OF THE AREA.

The Central Southern California area includes nearly all of Orange County, the southern two-thirds of Los Angeles County, the southwestern part of San Bernardino County, and the western part of Riverside County. It is embraced within parallels 33° 30′ and 34° 30′ north latitude and meridians 116° 30′ and 118° 30′ west longitude, and the boundaries are right lines except in the southwest, from Santa Monica to Aliso Point, where the area abuts upon the Pacific Ocean. The southern boundary is approximately 65 miles north of the California-Mexico line. The extent of the area surveyed is 7,330 square miles or 4,691,200 acres.[1] The survey comprises nearly all the developed agricultural sections in these counties.[2]

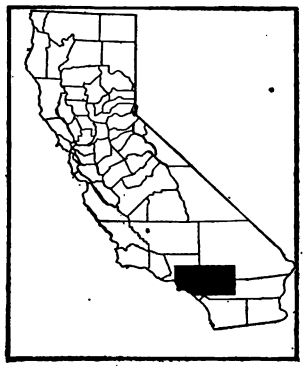

FIG. 1.—Sketch map showing location of the Central Southern area, California.

PHYSIOGRAPHY AND TOPOGRAPHY.

The area consists of three physiographic divisions: (1) The rough, dissected mountain ranges with the included local valley basins; (2) the desert region, with its long, gently sloping alluvial fans, its characteristic playas in the axial belt of the desert valleys, and its bare, stony, isolated hills and mountain ranges; (3) the valley region, comprising the larger structural basins, with associated stream valleys, low-lying hills, plains, and mesas.

The mountain region.—The surface features of the greater proportion of the area are very irregular and probably over one-half of it is mountainous or hilly. Parts of the San Gabriel, San Bernardino, San Jacinto, and Santa Ana Mountains are included. (See Pl. I, figs. 1 and 2.) As a whole the mountains are rough and broken,

[1] The survey coincides with Southern California Sheet No. 1 of the U. S. Geological Survey, which is compiled from twenty-three large-scale topographic sheets of this region. These large-scale atlas sheets were used as a base map in the soil-survey work.

[2] Detailed surveys have been made of parts of this area. Reports on these have been published under the following titles: Soil Survey of the Riverside Area, 1915; Pasadena Area, 1915; Los Angeles County, 1915; Anaheim Area, 1916; and San Fernando Area, 1915. The area also is joined upon the south in part by a reconnoissance survey, a report on which is published under the title Reconnoissance Soil Survey of the San Diego Region, Calif., 1915.

the most rugged mountainous section in southern California lying within the survey. The lands in this division are mainly nonagricultural. Most of the included slopes are extremely steep and very stony, and there are many sharp ridges and bare granite peaks, with intervening V-shaped canyons. These surface features contrast strongly with those of the highly developed agricultural valley region. The elevation ranges from 2,000 to over 11,000 feet.

For the most part the mountains are covered with brush, consisting mainly of various species of ceanothus, scrub oak, Engelmann oak, chemisal, mountain mahogany, laurel, sage, and manzanita, but some yellow pine, Jeffrey pine, sugar pine, cedar, bigcone spruce, and fir occurs along the summits and ravines at the higher elevations, while oak, box elder, cottonwood, alder, and sycamore grow along the streams at lower elevations. The San Gabriel, San Bernardino, San Jacinto, and Santa Ana Mountains form the greater part of the mountainous region. Practically all these are included within National Forests. Besides these major mountain ranges there are a number of less elevated mountain ranges, ridges, and knobs. The more conspicuous of these are the Verdugo Mountains, the Santa Monica Mountains, the San Pedro Hills, the San Rafael Hills, the Puente Hills, the San Jose Hills, the San Joaquin Hills, the Jurupa Mountains, the Badlands, the Box Springs Mountains, and the Lakeview Mountains. Some of these are quite closely associated with the principal mountain ranges already described, but many of them are more intimately identified with the valley regions of the survey and will be referred to more in detail under discussion of that region.

The desert region.—The desert region comprises most of the northern and part of the extreme eastern sections of the survey. It includes parts of the Mohave and the Coachella Deserts and consists of extensive plains formed mainly of sloping alluvial fans extending from the base of the mountains. Numerous playas occur east of the Mohave River. These are slight depressions into which drainage flows. They contain water for a brief period each year and are entirely devoid of vegetation. A few isolated barren mountains lying along the northern boundary are pronounced physical features of this division. Practically all of the region excepting the Coachella Desert lies more than 2,900 feet above sea level. A typical desert vegetation exists. A comparatively small acreage is used for agriculture. Parts of the Mohave Desert east of the Mohave River, known as Apple, Lucerne, and Johnson Valleys, have been settled to some extent.

The valley region.—The valley region includes that portion of the survey, exclusive of the Santa Ana Mountains, lying west of the San Jacinto Range and south of the San Bernardino and the San

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FIG. 1.—VIEW FROM MOUNT LOWE TRAIL, IN SAN GABRIEL MOUNTAINS, SHOWING SHARP RUGGED CRESTS AND ROUGH TOPOGRAPHY.

As a whole this is probably the roughest and most broken of the ranges of southern California.

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FIG. 2.—MOUNT SAN JACINTO, FROM SAN GORGONIO PASS, SHOWING ALLUVIAL FAN AT FOOT OF MOUNTAIN, OCCUPIED BY STONY SOILS OF THE TUJUNGA SERIES.

The light-colored strip in the foreground consists of riverwash.

Gabriel Mountains. This region has been defined as the Valley of California.[3]

It consists of a lowland area of associated but more or less distinct structural basins and valleys with marginal plains of alluvial fan formation and numerous groups of included low hills and mountains, the more important of which have already been enumerated. The various segments or parts of the valley region are described briefly in the following paragraphs:

South of Corona, Riverside, Colton, and Redlands, and between the Santa Ana and the San Jacinto Mountains, is a region comprising a number of small valleys separated more or less by groups of low hills and mountains or isloated rocky knobs or peaks. The valleys range in elevation from approximately 1,000 feet to about 1,600 feet and the associated hills and mountains from about 1,200 to 2,800 feet. The larger of the valleys in this region are Perris, Alessandro, and San Jacinto Valleys.

The Perris Valley lies in the northern central part of this region and extends from a point about 4 miles south of Perris northward to the vicinity of Alessandro, a distance of some 12 miles. Its outlines are irregular and indefinite. It is bounded upon the east by the Lakeview Mountains and a number of isolated granite knobs which attain maximum elevations slightly in excess of 2,600 feet and separate the valley from the San Jacinto Valley. The elevation of the Perris Valley at Perris is 1,456 feet and in its northern part slightly more. The surface is nearly level to slightly undulating or rolling. There is but little native tree growth.

Upon the north the Perris Valley expands into the Alessandro Valley. This is in physiographic character similar to the Perris Valley. Like the Perris Valley it is bounded upon the east by an area of irregular hills, mainly granitic, that extends to the north and west. The Box Springs Mountains separate the Alessandro Valley from the Riverside Basin lying on the north at an elevation several hundred feet lower. The Box Springs Mountains, like the Lakeview Mountains, are steep and rocky, and nearly devoid of vegetation. Upon the east the Alessandro Valley extends to the Badlands, which separate it from the San Timoteo Canyon and the Beaumont district. The Badlands consist of an elongated north and south belt of minutely and deeply dissected hills, lying just east of the Beaumont-Banning belt, formed by the erosion of consolidated and unconsolidated sedimentary rocks. The elevation of the Alessandro Valley at Box Springs, near its northern extremity, is 1,539 feet, and at Moreno, in its eastern part, 1,600 feet.

[3] See Hydrology of San Bernardino Valley, California. By Walter C. Mendenhall. U. S. Geological Survey Water Supply and Irrigation Paper, No. 142.