

LOCATION CARLSBAD

CA

Established Series
Rev. GK-RCH-LAB
03/2009

CARLSBAD SERIES

The Carlsbad series have brown, pale brown, and very pale brown slightly acid gravelly loamy sand A horizons, pale brown and light brown, slightly and strongly acid heavy loamy sand C horizons underlain by weakly cemented duripans at a depth of 38 inches.

TAXONOMIC CLASS: Sandy, mixed, thermic Entic Durixerpts

TYPICAL PEDON: Carlsbad gravelly loamy sand - shrubgrass. (Colors are for dry soil unless otherwise noted).

Acn1--0 to 3 inches; brown (10YR 5/3) gravelly loamy sand, dark brown (10YR 3/3) moist; weak fine granular structure; slightly hard, very friable; common fine roots; many fine tubular and interstitial pores; pebbles are iron concretions that make up 20 percent by volume of the horizon; slightly acid (pH 6.50); abrupt smooth boundary. (3 to 10 inches thick)

Acn2--3 to 21 inches; pale brown and very pale brown (10YR 6/3, 7/3) gravelly loamy sand, dark yellowish brown and yellowish brown (10YR 4/4, 5/4) moist; massive; hard, friable; few fine and coarse roots; many fine tubular and interstitial pores; common iron concretions; slightly acid (pH 6.5); clear smooth boundary. (6 to 18 inches thick)

C1--21 to 31 inches; pale brown (10YR 6/3) heavy loamy sand, dark yellowish brown (10YR 4/4) moist; massive; very hard, friable, slightly sticky, slightly plastic; few fine and coarse roots; many fine tubular and interstitial pores; few iron concretions; slightly acid (pH 6.5); gradual smooth boundary. (7 to 10 inches thick)

C2--31 to 39 inches; brown and light brown (7.5YR 5/4, 6/4) heavy loamy sand; dark brown and brown (7.5YR 4/4, 5/4) moist; massive; very hard, friable, slightly sticky, slightly plastic; few medium and coarse roots; common fine tubular and interstitial pores; strongly acid (pH 5.5); clear smooth boundary. (8 to 10 inches thick)

Cm--39 to 50 inches; brown and light brown (7.5YR 5/4, 6/4) weakly cemented sandy duripan.

TYPE LOCATION: San Diego County, California; 150 feet north of water tank at Oak Ridge School, near center sec. 14, T. 13 S., R. 4 W. (projected). UTN zone 11 475113e and 3656196n NAD83. 117 degrees, 15 minutes, 55 seconds west longitude, 33 degrees, 2 minutes 38 seconds north latitude.

RANGE IN CHARACTERISTICS: Depth to the duripan is 24 to 40 inches. Usually the soil between the depths of 12 and 35 inches is continuously moist in some part from about December 1 until May and is dry all the rest of the year. The mean annual soil temperature at 20 inches depth is about 64 degrees F.

The A horizon has hue of 10YR or 7.5YR, value of 5 through 7, and chroma of 3 or 4. It is loamy sand or light sandy loam and has 5 to 35 percent iron concretions 2 to 8mm in diameter. This horizon is slightly or medium acid. The upper part of the C horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 3 or 4. It is slightly to strongly acid. The lower part of the C horizon is weakly cemented to indurated. It is brittle when moist, it may soften when wet, but does not slake in water or HCl.

COMPETING SERIES: These are the [Chesterton](#), [El Peco](#), [Huichica](#), and [Tangair](#) series. Chesterton soils have fine textured argillic horizons. El Peco soils lack iron concretions and have a coarse-loamy control section.

Huichica soils lack iron concretions and have fine textured argillic horizon. Tangair soils lack a duripan.

GEOGRAPHIC SETTING: The Carlsbad soils are gently sloping to moderate steep and are at elevations of 30 to 300 feet. They formed in marine terraces that almost parallel the coast. The climate is subhumid mesothermal with dry somewhat foggy summers and moist cool winters. Mean annual precipitation is 10 to 16 inches. Mean annual temperature is about 62 degrees F, average January temperature is 55 degrees F, and average July temperature is 69 degrees F. the average frost-free season is 330 to 350 days.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the competing [Chesterton](#) soils and the [Alo](#), [Corralitos](#), [Las Flores](#), [Marina](#), [Salinas](#), and [Tujunga](#) soils. Alo soils are clayey soils developed on shale. Corralitos soils are very deep alluvial soils. Las Flores soils have clay subsoils. Marina, Salinas, and Tujunga soils lack iron concretions and duripans.

DRAINAGE AND PERMEABILITY: Well or moderately well drained; medium or rapid runoff; moderately rapid permeability to the duripan, the duripan is slowly or very slowly permeable.

USE AND VEGETATION: Used to grow truck crops and flowers. Native vegetation is mostly chamise, sumac, black sage, scrub oak, annual grasses, and forbs.

DISTRIBUTION AND EXTENT: Coastline of southern California. The soils are inextensive.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Davis, California

SERIES ESTABLISHED: San Diego County (Oceanside Area), California, 1929.

REMARKS: Carlsbad soils were formerly classified as Noncalcic Brown soils.

Last revised by the state on 12/73. UTM added 3/2009 ET.

ADDITIONAL DATA: NSSL pedon S56CA-073-001 (taxadjunct) and pedon S78CA-073-009 (no soil description)

National Cooperative Soil Survey
U.S.A.