

**SDRWQCB  
WATERSHED MANAGEMENT APPROACH  
APPENDIX A  
OVERVIEW OF SAN DIEGO REGION  
WATERSHED MANAGEMENT AREAS**  
*(also see Table 2)*

**1. SAN JUAN WATERSHED MANAGEMENT AREA**

**San Juan Hydrologic Unit (HU 901.00)**

The San Juan Hydrologic Unit is a trapezoidal-shaped area of about 500 square miles. The entire area of Orange County within the jurisdiction of the SDRWQCB is in the HU. Portions of Riverside County and San Diego County, several cities and unincorporated communities, and a portion of US Marine Corps Base Camp Pendleton are also located in the HU.

The three major creeks in the HU are Aliso Creek, San Juan Creek, and San Mateo Creek.

The watershed of Aliso Creek is the Aliso Hydrologic Subarea (HSA), an area of approximately 36 square miles. Precipitation in the watershed ranges from 12 to 14 inches per year. Aliso Creek flows into the Pacific Ocean in southern Laguna Beach at Aliso Beach Park, a popular recreational area.

San Juan Creek is the longest creek in the HU and the creek with the largest watershed in the HU. The headwaters of the creek are in the Cleveland National Forest; the mouth of the creek is at Doheny Beach State Park. Dana Point Harbor is a small craft harbor constructed just upcoast from the mouth of the creek, adjacent to Dana Point (which was named after Richard Henry Dana, who described pre-gold rush coastal California in *Two Years Before the Mast*).

A sizeable saltwater tidal marsh is located at the mouth of San Mateo Creek. Southern steelhead, a listed species, has been found in San Mateo Creek.

**2. SANTA MARGARITA RIVER WATERSHED MANAGEMENT AREA**

**Santa Margarita Hydrologic Unit (HU 902.00)**

The Santa Margarita Hydrologic Unit is a rectangular area of about 750 square miles located partly in Riverside County and partly in San Diego County. The cities of Murrieta and Temecula, and parts of Camp Pendleton and the unincorporated community of Fallbrook are located in the HU.

The HU is the watershed of the Santa Margarita River. The major tributaries of the river are Murrieta Creek and Temecula Creek. Annual

precipitation ranges from less than 12 inches near the coast to more than 45 inches inland near Palomar Mountain. Santa Margarita Lagoon, the estuary of the Santa Margarita River, is located entirely within Camp Pendleton.

**3. SAN LUIS REY RIVER WATERSHED MANAGEMENT AREA**  
**San Luis Rey Hydrologic Unit (HU 903.00)**

San Luis Rey Hydrologic Unit is a rectangular area of about 565 square miles, and includes all or parts of Camp Pendleton, the City of Oceanside, and the unincorporated communities of Fallbrook and Valley Center. In addition there are several Indian reservations in the HU. The HU is the watershed of the San Luis Rey River. Lake Henshaw, one of the largest water storage reservoirs in the San Diego Region, is located on upper portion of the river. Annual precipitation is heavier than in other units, ranging from less than 12 inches near the coast to 45 inches inland near Palomar Mountain.

The San Luis Rey River estuary is located at the mouth of the river, within the City of Oceanside and adjacent to the City's northern boundary. The mouth of the river is immediately adjacent to Oceanside Harbor and Del Mar Boat Basin, which are located side-by-side and protected from the ocean by the same breakwater. Oceanside Harbor is a civilian small craft harbor managed by the City of Oceanside. Del Mar Boat Basin is a military small craft harbor which is part of Camp Pendleton.

**4. CARLSBAD WATERSHED MANAGEMENT AREA**  
**Carlsbad Hydrologic Unit ( HU 904.00)**

Carlsbad Hydrologic Unit is a roughly triangular-shaped area of about 210 square miles. The unit includes all or portions of the cities of Oceanside, Carlsbad, Encinitas, Vista, and Escondido.

The HU contains one small coastal lagoon (Loma Alta Slough) and four major coastal lagoons (Buena Vista, Agua Hedionda, Batiquitos and San Elijo).

Loma Alta Slough is a small coastal lagoon located entirely within the City of Oceanside at the mouth of Loma Alta Creek. The slough is normally blocked off from the ocean by a sandbar.

Buena Vista Lagoon, at the mouth of Buena Vista Creek, lies between the cities of Carlsbad and Oceanside, and is partially within each city. Although the lagoon is at the mouth of the creek, a weir at the mouth of the lagoon maintains the lagoon water level above that of the ocean, so the lagoon is a freshwater environment. The source of water in the lagoon is inflow of rising groundwater and irrigation return water from the

area that drains to Buena Vista Creek. A portion of the lagoon has been designated as a bird sanctuary.

Agua Hedionda Lagoon, at the mouth of Agua Hedionda Creek, is located within the City of Carlsbad. Since the lagoon serves as an integral part of a power plant cooling water intake system, the lagoon is routinely dredged to keep it open to the ocean and maintain the tidal prism to provide a reserve cooling water supply. Jetties at the mouth of the lagoon also help keep the lagoon open to the ocean. The easterly portion of the lagoon is used for water-oriented recreation. The lagoon was the first location on the west coast of North America where the destructive non-native invasive alga *Caulerpa taxifolia* was found.

Batiquitos Lagoon, at the mouth of San Marcos Creek, enters the Pacific Ocean between the City of Carlsbad and the community of Leucadia, part of the City of Encinitas. As part of a recent offsite mitigation project for the Port of Los Angeles, the lagoon was dredged to remove accumulated sediment and jetties were constructed at mouth of the lagoon to keep the lagoon open to tidal action.

San Elijo Lagoon is the tidal marsh at the mouth of Escondido Creek. The marsh is normally closed off from the ocean but is subject to tidal fluctuations. Lake Wohlford is a reservoir located in the upper part of the Escondido Creek watershed.

**5. SAN DIEGUITO RIVER WATERSHED MANAGEMENT AREA**  
**San Dieguito Hydrologic Unit (HU 905.00)**

San Dieguito Hydrologic Unit is a rectangular-shaped area of about 350 square miles. It includes the San Dieguito River and its tributaries, including Santa Ysabel and Santa Maria creeks. The HU contains two major reservoirs, Lake Hodges and Sutherland Reservoir. The San Dieguito Lagoon is located at the mouth of the San Dieguito River. The lagoon forms the northerly boundary of the City of Del Mar. The lagoon is normally closed off from the ocean by a sandbar.

**6. PENASQUITOS / MISSION BAY WATERSHED MANAGEMENT AREA**  
**Penasquitos Hydrologic Unit (HU 906.00)**

Penasquitos Hydrologic Unit is a triangular-shaped area of about 170 square miles, which includes portions of the cities of Poway and San Diego. Annual precipitation in the HU ranges from less than 8 inches along the coast to 18 inches inland. Several small creeks drain this HU. Miramar Reservoir contains imported water (mainly from the Colorado River.)

Los Penasquitos (or Sorrento) Lagoon, at the mouth of Penasquitos Creek, is part of the Torrey Pines State Preserve, where the only

remaining mainland stand of the rare Torrey Pine occurs. The mouth of the lagoon is periodically opened to allow tidal circulation.

Mission Bay, a small craft harbor and recreational area has been extensively dredged and filled. Only the Kendall-Frost Reserve (part of the University of California Natural Reserve System) located in the northeastern part of the bay, remains in a somewhat natural state. The San Diego River, which historically flowed into the bay, has been re-routed directly to the ocean.

## **7. SAN DIEGO RIVER WATERSHED MANAGEMENT AREA**

### **San Diego Hydrologic Unit (HU 907.00)**

San Diego Hydrologic Unit is a long, triangular-shaped area of about 440 square miles drained by the San Diego River. San Vicente, Jennings, Murray, El Capitan, and Cuyamaca reservoirs are major water supply storage facilities in the HU. San Vicente, Jennings, and Murray reservoirs store mostly imported (mainly Colorado River) water. El Capitan Reservoir stores mostly local runoff and some imported (mainly Colorado River) water. Cuyamaca Reservoir stores only local runoff. Annual precipitation ranges from less than 11 inches at the coast to about 35 inches around Cuyamaca and El Capitan reservoirs.

Much of the impounded water is used to serve major developed areas within and outside the HU. The HU includes all or portions of the cities of San Diego, Poway, La Mesa, and El Cajon and the unincorporated communities of Santee, Lakeside, Alpine and Julian.

The San Diego River historically flowed into Mission Bay and San Diego Bay. However, the river has been channelized and now flows directly into the Pacific Ocean without entering either bay. The salt water tidal marsh confined within the river channel and Famosa Slough (which is connected to but outside of the river channel) are all that remain of a once extensive salt water tidal marsh at the mouth of the river.

## **8. SAN DIEGO BAY WATERSHED MANAGEMENT AREA**

### **San Diego Bay**

San Diego Bay is a natural, crescent-shaped embayment extending approximately 14 miles along a curved axis from where it opens to the Pacific Ocean at Point Loma in the north to its innermost reaches at the mouth of the Otay River in the south. The bay has been extensively modified by dredging and filling. The bay is narrower and deeper than in its undredged, unfilled state. The surface area of the bay is now approximately 19 square miles. The width of the bay currently ranges from 0.25 miles to 2.5 miles. The depth of the bay currently ranges from more than 60 feet in some northern areas to only a few feet in much of the southern portion. Depths average less than 40 feet. The bay is home to

and/or is visited by deep draft commercial and military vessels as well as numerous commercial, military, and private small craft.

Freshwater inflow to the bay has been reduced by re-routing the San Diego River so that it no longer enters the bay and by construction of dams for water supply reservoirs on Sweetwater River and Otay River. The salinity of the bay is now generally similar to that of the ocean. In summer and early fall, the salinity of the southern part of the bay may be somewhat higher than that of the ocean. Immediately following storm events, the salinity of the bay in the vicinity of the mouths of rivers, creeks, and storm drains may be somewhat lower than that of the ocean.

The bay is located within the cities of San Diego, National City, Chula Vista, and Coronado.

**Pueblo San Diego Hydrologic Unit (HU 908.00)**

Pueblo San Diego Hydrologic Unit is a largely urbanized triangular-shaped area of about 60 square miles with no major stream system. It is bordered on the north by the watershed of the San Diego River and on the south by San Diego Bay and the watershed of the Sweetwater River. The Pueblo San Diego Hydrologic unit is located entirely within the city of San Diego. The unit is relatively dry with an average annual precipitation of less than 11 inches to 13 inches.

**Sweetwater Hydrologic Unit (HU 909.00)**

Sweetwater Hydrologic Unit is an elongated northeasterly trending area of about 230 square miles. Most of the HU drains to the Sweetwater River, on which Sweetwater Reservoir and Loveland Reservoir are located. The annual average precipitation varies from less than 11 inches at the San Diego Bay shoreline to about 35 inches inland. Sweetwater Marsh is located at the mouth of Sweetwater River where the river flows into San Diego Bay.

**Otay Hydrologic Unit (HU 910.00)**

Otay Hydrologic Unit is a club-shaped area of about 160 square miles. The major stream system traversing the area is the Otay River, on which the Upper and Lower Otay Reservoirs are located. The Lower Otay Reservoir is the terminus of the second San Diego Aqueduct. Major population centers include the City of Imperial Beach in the coastal area and the unincorporated community of Dulzura inland. The annual precipitation generally increases inland from the coast and ranges from less than 11 to 19 inches. The Otay River flows into the southernmost end of San Diego Bay. The Coronado Hydrologic Area, which comprises the westernmost portion of the unit, includes North Island Naval Air Station, the City of Coronado and the Silver Strand, which separates the southern portion of San Diego Bay from the ocean.

**9. TIJUANA RIVER WATERSHED MANAGEMENT AREA****Tijuana Hydrologic Unit (HU 911.00)**

Tijuana Hydrologic Unit is a triangular-shaped area drained by Cottonwood and Campo creeks, which are tributaries to the Tijuana River. It covers an area of about 470 square miles and lies mainly in the mountain-valley section. Almost 75% of the area of the watershed is in Mexico.

Tijuana Estuary, at the mouth of the river, occupies approximately 2000 acres. It is generally open to the ocean. Most of the estuary can be classified as a saltwater marsh, but there are also a number of arms of open water.

Annual precipitation varies from less than 11 inches near the coast to more than 25 inches farther inland near Laguna Mountain. Runoff is captured by Morena Reservoir and Barrett Reservoir on Cottonwood Creek.

The portion of the watershed on the United States side of the international border is sparsely populated with the major population centers at San Ysidro and Campo. The population in the portion of the watershed on the Mexican side of the international border exceeds one million.