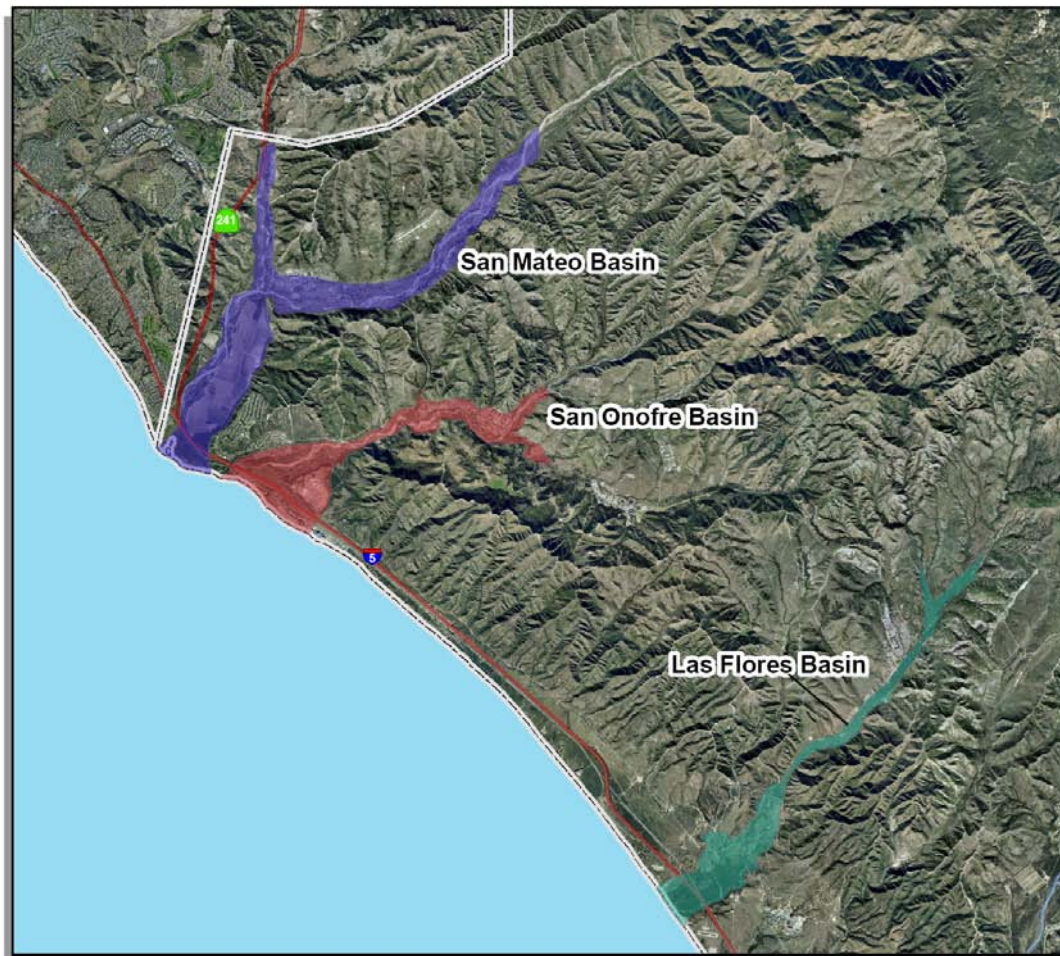


# Chapter IV – Groundwater Basin Reports

## San Diego County Basins - North San Diego County Basins

The groundwater basins in north San Diego County discussed in this section include: San Mateo Basin, San Onofre Basin, and Las Flores Basin. These basins consist of 496 square miles of drainage area in San Diego, Orange, and Riverside counties, with approximately 150 square miles located in northwest San Diego County. The North San Diego Basins underlie the service area of the San Diego County Water Authority (SDCWA). A map of the North San Diego County Basins is presented in **Figure 21-1**.

**Figure 21-1**  
**Map of North San Diego County Basins**



**North San Diego County Basins**



Source: SDCWA, 1997

## BASIN CHARACTERIZATION

The following section presents the physical descriptions of the North San Diego County Basins.

### Basin Producing Zones and Storage Capacity

A summary of the aquifer characteristics of the North San Diego County Basins is presented in **Table 21-1**.

**Table 21-1**  
**Summary of Hydrogeologic Parameters for North San Diego County Basins**

Parameter	San Mateo Basin	San Onofre Basin	Las Flores Basin
Aquifer(s)	Unconfined alluvium	Unconfined alluvium	Unconfined alluvium
Depth of groundwater basin	Up to 100 feet	Up to 55 feet	Up to 100 feet
Storage Capacity	6,500 AF	6,500 AF	8,400 AF

Source: San Diego County Water Authority, Groundwater Report, 1997

#### San Mateo Basin

The San Mateo Basin underlies the San Mateo Valley and Christianitos Canyon in northwestern San Diego County and southeastern Orange County. The basin is bounded by the Pacific Ocean on the west and elsewhere by semi-permeable Tertiary marine sedimentary rocks. The valleys are drained westward to the ocean by San Mateo and Christianitos Creeks.

#### San Onofre Basin

The San Onofre Basin underlies the San Onofre Valley in northwestern San Diego County. The basin is bounded by the Pacific Ocean on the west and elsewhere by semi-permeable Tertiary marine sedimentary rocks. The valley is drained westward to the ocean by San Mateo Creek.

#### Las Flores Basin

The Las Flores Basin (also known as the Las Pulgas Basin) underlies Las Flores Creek. The basin is bounded by the Pacific Ocean on the west and elsewhere by semi-permeable Tertiary marine sedimentary rocks. The valley is drained westward to the ocean by Las Flores Creek.

### Safe Yield/Long-Term Balance of Recharge and Discharge

Camp Pendleton reports the estimated safe yield for the San Mateo Basin at 3,180 AFY, the San Onofre Basin at 1,420 AFY, and the Las Flores Basin at 600 AFY.

### **San Mateo Basin**

Recharge is derived from percolation of runoff from rainfall through the natural reaches of San Mateo Creek. Effluent from Camp Pendleton Sewage Treatment Plant No. 12 is used for a seawater intrusion barrier.

### **San Onofre Basin**

Recharge is derived from percolation of runoff from rainfall through the natural reaches of San Onofre Creek. Effluent from Camp Pendleton Sewage Treatment Plant No. 11 is used for a seawater intrusion barrier.

### **Las Flores Basin**

Recharge is derived from percolation of runoff from rainfall through the natural reaches of Las Flores Creek. Effluent from Camp Pendleton Sewage Treatment Plant No. 9 is used for a seawater intrusion barrier.

## **GROUNDWATER MANAGEMENT**

None of the basins are managed and interactions with adjoining basins are not fully understood.

## **WATER SUPPLY FACILITIES AND OPERATIONS**

The following section provides a summary of facilities within the North San Diego County Basins.

### **Active Production Wells**

Groundwater from the San Mateo and San Onofre Basins supplies the northern portion of Camp Pendleton. Groundwater from the Las Flores Basin (and the Santa Margarita River system) provides the source of supply to the southern portion of Camp Pendleton. Camp Pendleton has four potable water supply wells in the San Mateo Basin, three potable water supply wells in the San Onofre Basin and three potable water supply wells in the Las Flores Basin. Reported average groundwater production (1985 through 2004) from these basins, as provided by Camp Pendleton, is shown in **Table 21-2**.

### **Other Production**

There are no data related to other production.

### **ASR Wells**

There are no ASR wells in the North San Diego County Basins.

### Spreading Basins

There are spreading basins in the San Mateo Basin and the San Onofre Basin, but these spreading basins are used only for spreading treated wastewater effluent for seawater intrusion barriers for each of these groundwater basins. This is discussed below.

**Table 21-2  
 Summary of Production in the North San Diego County Basins**

<b>Basin</b>	<b>Number of Wells (Potable)</b>	<b>Average Production (AFY)</b>	<b>Well Operation Cost (\$/AF)</b>
San Mateo	4	2,000	Data not available
San Onofre	3	500	
Las Flores	3	400	
<b>Total</b>	<b>10</b>	<b>2,900</b>	

Source: Camp Pendleton, 2006

### Seawater Intrusion Barriers

There are seawater intrusion barriers in San Mateo Basin, San Onofre Basin and Las Flores Basin. These are described as follows.

#### **San Mateo Basin**

In the San Mateo Basin, wastewater is treated to Title 22 standards at Camp Pendleton Sewage Treatment Plant No. 12 and the effluent is delivered to percolation ponds near Interstate 5 to maintain a seawater intrusion barrier for the basin. This operation takes place down gradient from all potable water production wells.

#### **San Onofre Basin**

In the San Onofre Basin, wastewater is treated to Title 22 standards at Camp Pendleton Sewage Treatment Plant No. 10 and the effluent is delivered to percolation ponds near the coast to maintain a seawater intrusion barrier for the basin. This operation takes place down gradient from all potable water productions wells.

#### **Las Flores Basin**

In the Las Flores Basin, wastewater is treated to Title 22 standards at Camp Pendleton Sewage Treatment Plan No. 9 and the effluent is delivered to six injection wells at the coast along Red Beach to maintain a seawater intrusion barrier for the basin. This operation takes place down gradient from all potable water production wells.

## **Desalters**

There are no desalters in the North San Diego County Basins.

## **GROUNDWATER LEVELS**

### **San Mateo Basin**

According to DWR, groundwater level information is available until about 1988 with hydrographs showing that water levels vary with wet and dry weather cycles, generally recovering during wet periods. A hydrograph for a well in Christianitos Canyon ranges from 2 to 40 feet below ground surface during about 1965 through 1988. A hydrograph for one well at the confluence of Christianitos and San Mateo Creeks ranges from about 5 to 40 feet below ground surface during 1955 through 1988. Hydrographs for wells in the western part of the basin show small fluctuations about a stable level during 1946 through 1988.

### **San Onofre Basin**

According to DWR (2004), groundwater level information is available until about 1988 with hydrographs showing that water levels vary with wet and dry weather cycles, generally recovering during wet periods. In the upper part of the San Onofre Valley, a hydrograph for one well shows declines of 25 to 35 feet per dry cycle, but overall long-term stable behavior. In the lower San Onofre Valley, hydrographs show water levels generally rising from 4 to 12 feet during the 1950s through 1980s.

### **Las Flores Basin**

Water level data are not available for the Las Flores Basin.

## **GROUNDWATER QUALITY**

The following section describes the groundwater quality issues in the North San Diego County Basins. It includes a discussion of the monitoring programs and constituents of concern.

### **Groundwater Quality Monitoring**

The basin water quality assessments use Title 22 reporting for production wells.

### **Groundwater Contaminants**

The main constituent of concern in North San Diego County Basins is TDS, as shown in **Table 21-3**.

### **Blending Needs**

Data regarding blending needs are not available.

## Groundwater Treatment

Data regarding groundwater treatment are not available.

**Table 21-3**  
**Summary of Constituents of Concern in the North San Diego County Basins**

<b>Basin</b>	<b>Constituent</b>	<b>Units</b>	<b>Range</b>	<b>Description</b>
San Mateo Basin	<b>TDS</b> Secondary MCL = 500	mg/L	400 to 700	Suitable for domestic and irrigation uses.
San Onofre Basin	<b>TDS</b> Secondary MCL = 500	mg/L	300 to 800	Generally suitable for both domestic and irrigation uses, though groundwater in alluvium may be rated marginal for irrigation locally.
Las Flores Basin	<b>TDS</b> Secondary MCL = 500	mg/L	600 to 900	Generally suitable for both domestic and irrigation uses

Sources: SDCWA, 1997; DWR, 2003 and 2004, Camp Pendleton, 2006

## CURRENT GROUNDWATER STORAGE PROGRAMS

There are no groundwater storage agreements in the basins.

In 1997, Camp Pendleton and the former Tri-Cities Water District in southern Orange County were evaluating the potential for additional groundwater development within the San Mateo Basin. The former Tri-Cities Water District is now identified as the “Joint Regional Water Supply System” or JWRSS under a Joint Powers Authority (JPA), with South Coast Water District accepting the responsibility for operations and maintenance of the JWRSS. One project under study would have involved connecting the Camp Pendleton and former Tri-Cities water systems, and constructing wells as a source of emergency supply. A second proposal under study was a conjunctive use program to develop up to 2,000 AF of additional potable supply.

Stetson Engineers completed a study of potential groundwater management scenarios in the San Mateo and San Onofre Basins. Scenarios included sustained basin yield pumping and development of conjunctive use elements consistent with use of water from the Santa Margarita River Basin. The study included examination of a water exchange with Orange County, with construction of a pipeline from the wells in the San Mateo Basin to a South Coast Water District pipeline in Orange County, with water provided to Orange County in exchange for a similar amount of water provided to the city of Fallbrook through the San Diego Aqueduct.

## **BASIN MANAGEMENT CONSIDERATIONS**

- High TDS levels, in particular in the San Onofre Basin, influence the suitability of groundwater for potable water use.
- Camp Pendleton and the former Tri-Cities Water District studied a potential conjunctive use program. If a similar program were pursued by the JWRSS (the former Tri-Cities Water District system operated by the South Coast Water District), an institutional agreement would need to be developed by the two agencies.

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