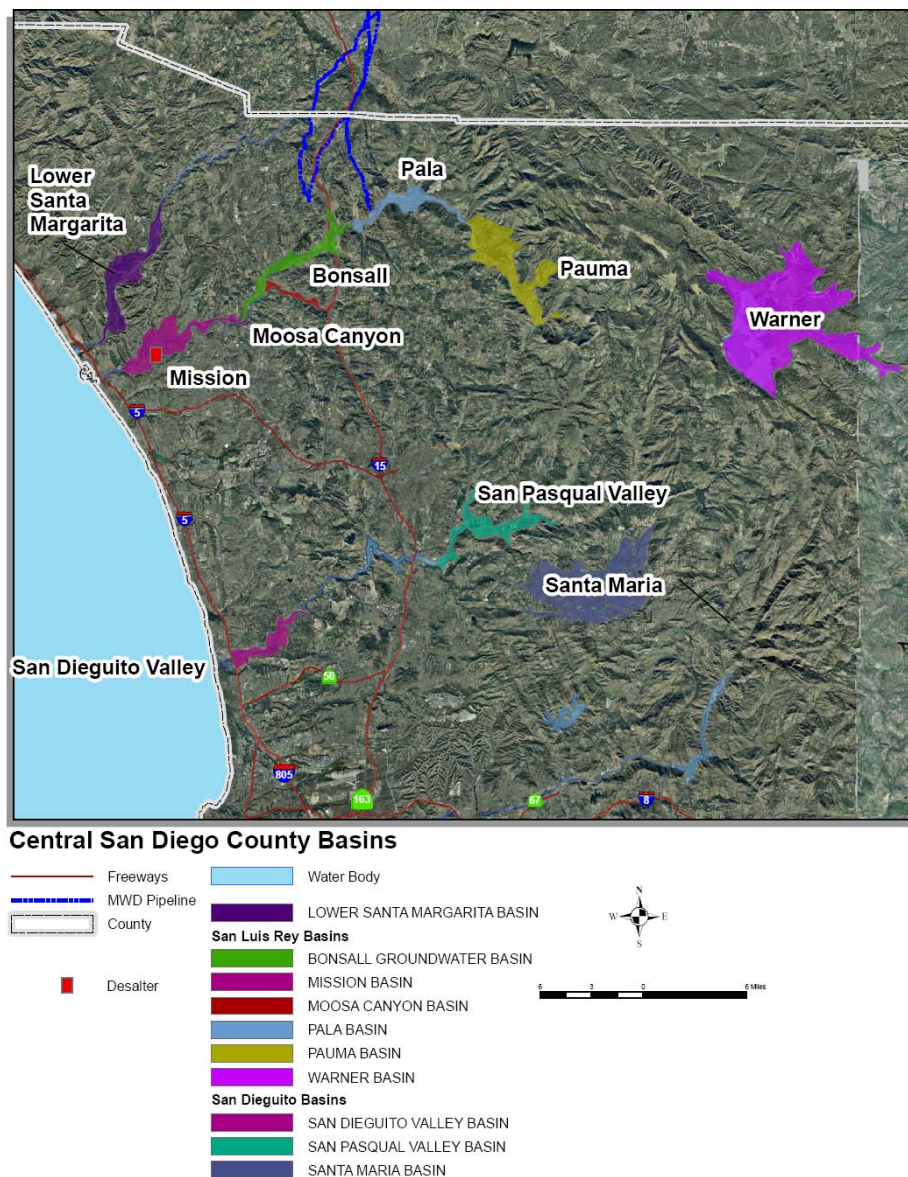


Chapter IV – Groundwater Basin Reports San Diego County Basins - Central San Diego County Basins

The groundwater basins in central San Diego County discussed in this section include: Lower Santa Margarita River Basin (Upper Ysidora Basin, Chappo Basin, and Lower Ysidora Basin), San Luis Rey River Valley Basins (Mission Basin, Bonsall Basin, Moosa Canyon Basin, Pala Basin, Pauma Basin, and Warner Basin), and the San Dieguito River Basins (San Dieguito Valley Basin, San Pasqual Valley Basin and Santa Maria Basin). The Central San Diego County Basins underlie the service area of the San Diego County Water Authority (SDCWA). A map of the Central San Diego County Basins is presented in **Figure 22-1**.

**Figure 22-1
Map of the Central San Diego County Basins**



Source: SDCWA

BASIN CHARACTERIZATION

The following section provides a physical description of the Lower Santa Margarita River Basins, the San Luis Rey River Valley Basins, and the San Dieguito River Basins, including their geographic location and hydrogeologic character.

Basin Producing Zones and Storage Capacity

Table 22-1 provides a summary of hydrogeologic parameters of the South San Diego Basins. Each basin is discussed separately in the following section. **Table 22-2** provides a summary of the storage and yield parameters for each of the basins in the Central San Diego County area.

Table 22-1
Summary of Hydrogeologic Parameters for Central San Diego County Basins

Parameter	Lower Santa Margarita River Basins	San Luis Rey River Valley Basins	San Dieguito River Basins
Aquifer(s)	Unconfined to semi-confined alluvium	Unconfined to semi-confined alluvium	Unconfined to semi-confined alluvium
Depth of groundwater basin	30 to 200 feet	<u>Mission Basin</u> Up to 220 feet <u>Bonsall Basin</u> Up to 130 feet <u>Pala/Pauma Basin</u> Up to 240 feet <u>Moosa Canyon Basin</u> Up to 150 feet <u>Warner Basin</u> > 900 feet	<u>San Dieguito Valley Basin</u> Up to 150 feet <u>San Pasqual Valley Basin</u> Up to 200 feet <u>Santa Maria Basin</u> Up to 225 feet
Thickness of water-bearing units	30 to 200 feet	Data not available	Data not available

Source: Camp Pendleton, 2006; City of San Diego, 2006; SDCWA, 1997

Lower Santa Margarita River Basins

The Santa Margarita River basin consists of 744 square miles of drainage area in both San Diego and Riverside Counties. The Santa Margarita River basin may be separated into the “Upper Basin” and the “Lower Basin.” The Upper Basin is located in Riverside County and is controlled by the drainage of Temecula and Murrieta Creeks. The Lower Basin is controlled by the 27-mile long Santa Margarita River and contains major tributaries such as De Luz, Sandia, and Fallbrook Creeks. The entire Lower Basin has a drainage area of approximately 154 square miles.

Groundwater is found in the alluvial basin located downstream from the confluence of the Santa Margarita River and De Luz Creek and, to a lesser extent, in the shallow alluvium upstream of that confluence. The water-bearing unit within the basin is Quaternary age alluvial deposits, which consist of unconsolidated gravel, sand, silt and clay, which are 150 to 200 feet thick. Well yields in the basin range from 200 to 1,980 gpm. Groundwater is unconfined in the eastern portion and semi-confined in the western portion of the basin. Groundwater is also extracted from residuum and fractured bedrock beneath the basin.

Table 22-2
Summary of Storage and Yield for the Central San Diego County Basins

Parameter	Lower Santa Margarita River Basins	San Luis Rey River Valley Basins	San Dieguito River Basins
Natural Safe Yield	5,400 to 16,700 AFY	<u>Mission Basin</u> 7,000 to 10,000 AFY <u>Bonsall Basin</u> 5,400 AFY <u>Pala/Pauma Basin</u> 8,000 AFY <u>Moosa Canyon Basin</u> Data not available <u>Warner Basin</u> 12,000 AFY	<u>San Dieguito Valley Basin</u> <2,500 AFY <u>San Pasqual Valley Basin</u> 5,800 AFY <u>Santa Maria Basin</u> >2,500 AFY
Total Storage	48,100 to 69,200 AF	<u>Mission Basin:</u> 92,000 AF <u>Bonsall Basin</u> 25,000 to 40,000 AF <u>Pala/Pauma Basin</u> 50,000 to 75,000 AF <u>Moosa Canyon Basin</u> 4,000 AF <u>Warner Basin</u> 550,000 AF	<u>San Dieguito Valley Basin</u> 50,000 AF <u>San Pasqual Valley Basin</u> 58,000 AF <u>Santa Maria Basin</u> 36,000 AF
Unused Storage Space	Negligible	<u>Mission Basin</u> 9,000 AF <u>Other Basins</u> Unknown	Unknown
Portion of Unused Storage Available for Storage	Negligible	Unknown	

Sources: Camp Pendleton, 2006; SDCWA, 1997; Vista Irrigation District, 2006; Santa Margarita River Watermaster, 2006; City of San Diego, 2006

SDCWA reports that the total storage capacity for the basin is 69,200 AF. The Santa Margarita River Watermaster reports that the total combined storage for the Lower Santa Margarita Groundwater Basin (including the Upper Ysidora, Chappo, and Lower Ysidora Basins) between the depths of 5 and 100 feet is 48,100 AF. However, much of the storage is below sea level. In 2004/05, useable groundwater in storage was computed for all three sub-basins to be 28,634 AF out of a total usable space of 28,700 AF (Santa Margarita River Watermaster, 2006), which suggests that the basin was nearly full. Because of shallow water levels (often less than 10 feet below ground surface) in this area, there is limited available storage space.

San Luis Rey River Valley Basins

The San Luis Rey River watershed is located east of the City of Oceanside. The watershed includes Mission Basin, Bonsall Basin, Moosa Canyon Basin, Pala Basin, Pauma Basin and Warner Basin. The 558 square mile drainage is the largest hydrologic unit in the San Diego region. The watershed drains to the Pacific Ocean to the west and is bounded by the Moserate Mountains to the north, the Cleveland National Forest and Camp Pendleton to the northwest, and Escondido, San Diego, and other cities to the south. The basin is roughly 50 miles long by 16 miles wide, and is divided into two hydrologic units by Henshaw Dam. The areas above and below the dam encompass 206 and 354 square miles, respectively.

San Luis Rey River Valley Groundwater Basins underlie an east-west-trending alluvium-filled valley located along the western coast of San Diego County. The major hydrologic feature is the San Luis Rey River, which drains the valley overlying the basin. The basin is bounded on the east, northeast and southeast by the contact of alluvium with impermeable Mesozoic granitic and Pre-Cretaceous metamorphic rocks. In the northwest and southwest of the lower portion of the basin, alluvium is in contact with the semi-permeable Eocene marine deposits and Tertiary non-marine deposits. The basin is bounded on the west by the Pacific Ocean. The watershed includes Mission Basin, Bonsall Basin, Moosa Canyon Basin, Pala Basin, Pauma Basin and Warner Basin.

Mission Basin

The Mission Basin lies almost entirely within the limits of the City of Oceanside and extends upstream from the Pacific Ocean to just past Oceanside's eastern boundary and west of the Bonsall Bridge near the intersection of State Route (SR) 76 and SR 13. The basin is alluvial and unconfined in the central and eastern areas; while there is unconfined alluvium overlying semi-confined alluvium in the western areas. The volume of groundwater currently in storage within the alluvial aquifers (shallow and deep) in the Mission Basin is estimated to be 54,000 AF. The volume of unused storage within the alluvium (occurring between the water table and the ground surface) was estimated to be 9,000 AF. The amount of this storage that is unusable has not been determined.

Bonsall Basin

The Bonsall Groundwater Basin is located east and upstream of the Mission Basin. It is generally located within unincorporated areas of San Diego County. The Bonsall Groundwater

Basin extends eastward from the Bonsall Bridge to a point approximately one mile west of the intersection of Rice Canyon Road and SR 76. The basin is alluvial and unconfined.

Moosa Canyon Basin

This basin is south and tributary to Bonsall Basin.

Pala/Pauma Basins

These are unconfined alluvial basins to the east of the Bonsall Basin.

Warner Basin

This groundwater basin underlies the Warner Valley and Valle de San Jose, the upper drainage of the San Luis Rey River in northeastern San Diego County. The basin is bounded on the west by Lake Henshaw and the Elsinore fault and on all other sides by impermeable crystalline rocks of the Peninsular Ranges.

The principal water bearing deposits within the San Luis Rey River Basins are Quaternary and younger alluvium. The most productive materials are the sands and gravels. Well yields can exceed 2,000 gpm and average 500 gpm. Thickness of these deposits varies in the basin with an average thickness of 200 feet.

San Dieguito River Basins

The San Dieguito River watershed is a drainage area of approximately 346 square miles that includes portions of the cities of Del Mar, Escondido, Poway, San Diego, and Solana Beach, and unincorporated San Diego County. The watershed includes the San Dieguito Valley Basin, the San Pasqual Valley Basin, and the Santa Maria Basin.

San Dieguito Valley Basin

The San Dieguito Valley Basin is an alluvial groundwater basin that occupies the Lower San Dieguito River Valley west of Lake Hodges, and extends inland approximately six miles from the Pacific Ocean. The basin underlies the cities of Del Mar, Solana Beach and San Diego, and the County of San Diego. In the past, the basin provided a local source of water for both agricultural and domestic activities. However, the construction of Lake Hodges Dam significantly reduced natural recharge to the groundwater basin. Lake Hodges is a 33,550 AF reservoir owned and operated by the city of San Diego. This, coupled with periodic drought and increased local pumping has, in the past, resulted in an extreme lowering of the groundwater table, seawater intrusion, and increased salinity levels in the groundwater. The San Dieguito Valley basin is estimated to have a storage capacity of 50,000. It is unclear how much groundwater is currently in storage.

San Pasqual Valley Basin

The San Pasqual Basin is located in the northern portion of the City of San Diego, along the San Dieguito River upstream of Lake Hodges, between the City of Escondido to the north and the Community of Rancho Bernardo and the City of Poway to the south. The City of San Diego reports that the San Pasqual Basin is unconfined and that the basin surface area is approximately 5,064 acres. According to DWR, the groundwater basin underlies the San Pasqual Valley and the Cloverdale, Rockwood and Bandy Canyons. The basin is bounded by Lake Hodges on the west and otherwise nonwater-bearing rocks of the Peninsular Ranges. Metcalf & Eddy notes that the most common estimate for total groundwater storage capacity is 58,000 AF.

The majority of the San Pasqual Basin is owned and managed by the City of San Diego Water Department. Additionally, the City of San Diego owns the rights to the underlying groundwater basin. As a designated agricultural preserve, the San Pasqual Valley is sparsely populated. The San Diego Wild Animal Park operates in the valley through a lease agreement with the city.

Santa Maria Basin

The Santa Maria Basin underlies the Santa Maria Valley in central San Diego County. The basin is bounded by impermeable crystalline rocks. The valley is drained by Santa Maria Creek, a tributary to San Dieguito River. Total storage capacity of the basin is estimated to be 77,000 AF. Storage capacity for the alluvium is estimated at about 3,360 AF and for the residuum (bedrock that has weathered in place) is about 32,400 AF for a total storage capacity of 36,000 AF.

Safe Yield/Long-Term Balance of Recharge and Discharge

Central San Diego County is relatively dry with average precipitation of 9.09 inches per year. **Figure 22-2** presents the historical precipitation from the Oceanside Marina. Extremely dry years occurred in 1989, 1994, 1999, and 2002. Fairly wet years occurred in 1993 and 1998. Primary sources of recharge in these basins are from surface water infiltration in the river bottoms.

Lower Santa Margarita River Basins

As shown in **Table 22-2**, the safe yield of the Lower Santa Margarita River Basins is estimated at 5,400 to 16,700 AFY (Camp Pendleton, 2006).

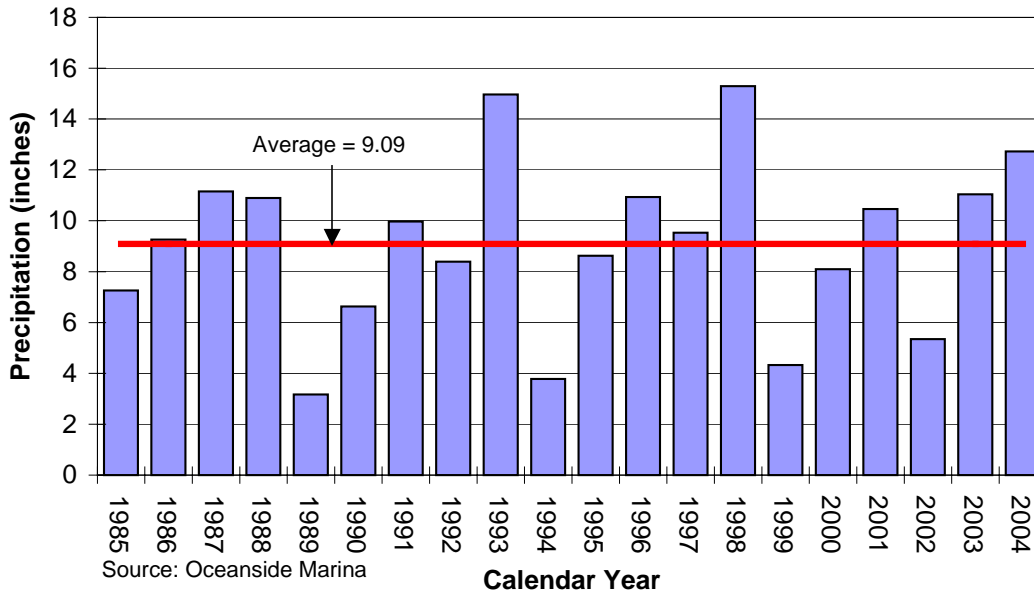
San Luis Rey River Valley Basins

The San Luis Rey Valley groundwater basins are recharged by imported irrigation water applied on upland areas and by storm-flow in the San Luis Rey River and its tributaries. Movement of groundwater in the alluvial aquifer is westward towards the Pacific Ocean. The estimated sustainable yield of the San Luis Rey River Basins without groundwater management totals is estimated to be approximately 25,400 AFY to 38,400 AFY.

San Dieguito River Basins

The estimated sustainable yield of the San Dieguito River Basins without groundwater management is presented in **Table 22-2**. Estimates of safe yield range from 14,230 to 17,310 AFY for the San Dieguito River Basins.

Figure 22-2
Historical Precipitation in the Central San Diego County



GROUNDWATER MANAGEMENT

The following section describes how the Lower Santa Margarita River Basin, the San Luis Rey River Basins, and the San Dieguito River Basins are currently managed.

Basin Governance

The following describes the management structure within the Lower Santa Margarita River Basins, the San Luis Rey River Basins, and the San Dieguito River Basins. A summary of the management agencies in the Central San Diego County Basins is shown in **Table 22-3**.

Lower Santa Margarita River Basins

The Lower Santa Margarita River Basins are adjudicated. The basin constraints and limitations are related to various state permits, rights, and licenses. There are various federal and state court judgments and decisions, as well as pre-1914 water rights. Also, there are pending lawsuits in state and federal courts concerning water rights and stream flows in the Santa Margarita River watershed.

**Table 22-3
 Summary of Management Agencies in the Central San Diego County Basins**

Agency	Role
Lower Santa Margarita River Basins	
Santa Margarita River Watershed Watermaster	Court-appointed Watermaster for oversight and administration of water rights
Santa Margarita River Watershed Watermaster Steering Committee	Assist the Court and Watermaster in administering the water rights
Camp Pendleton	Operation of recharge facilities and Red Beach seawater barrier.
San Luis Rey River Basins	
San Luis Rey Watershed Council	Develop and implement a comprehensive resource management plan for the San Luis Rey River and its tributaries
San Dieguito River Basins	
San Dieguito Basin Task Force	Evaluating the feasibility of groundwater management and a 4,000 to 8,000 AFY conjunctive use project in the lower San Dieguito basin.
City of San Diego	AB3030 Groundwater Management Plan in San Pasqual Basin will be considered for adoption in September 2007. Evaluating the feasibility of 10,000 AFY of conjunctive use in San Pasqual Basin. Evaluating the feasibility of 5,000 AFY of brackish desalination facility in San Pasqual Basin.

In March 1989, the Court appointed a Watermaster to administer and enforce the provisions of the Modified Final Judgment and Decree entered on April 6, 1966 by the U.S. District Court in the United States v. Fallbrook Utility District, et al. (Civil No. 1247-SD-T) and subsequent orders of the Court. Also in 1989, the Court also appointed a Steering Committee that is currently comprised of representatives from the United States, Eastern Municipal Water District (EMWD), Fallbrook Public Utility District, Metropolitan, the Pechanga Band of Luiseño

Indians, and Rancho California Water District (RCWD). The purposes of the Steering Committee are to assist the Court and the Watermaster in administering the water rights.

The United States Bureau of Reclamation (USBR) is currently conducting a study on a conjunctive use project that is to provide a “physical solution” to the Federal lawsuit between Camp Pendleton and Fallbrook Public Utilities District. The project will also provide an emergency delivery system for imported water to Camp Pendleton, while allowing Camp Pendleton to meet its domestic, agricultural, and military water needs.

San Luis Rey River Valley Basins

The San Luis Rey River Valley Basins are unadjudicated. There is no established governance structure regulating the groundwater basins within the San Luis Rey River watershed. There is the San Luis Rey Watershed Council – a partnership of local landowners, agricultural growers, Native American bands, community and environmental organizations, government agencies and special districts – whose primary goal is to develop and implement a comprehensive resource management plan for the San Luis Rey River and its tributaries. The Council developed the "San Luis Rey Watershed Management Guidelines" document in 2000, to serve as the foundation for current and future San Luis Rey River management efforts. Council members identified and prioritized important issues for the river and outlined recommended actions for improving the health of the watershed. These guidelines will be revised and updated periodically to reflect the needs of the watershed.

San Dieguito River Basins

The San Dieguito River Basins are unadjudicated. There is no established governance structure regulating the groundwater basins within the San Dieguito River watershed. The San Dieguito Basin Task Force (composed of nine water supply and wastewater agencies) is currently evaluating the feasibility of groundwater management and a 4,000 to 8,000 AFY conjunctive use project in the lower San Dieguito Basin. The city of San Diego is preparing a groundwater management plan for the San Pasqual Basin.

Interactions with Adjoining Basins

There are no formal agreements governing flow between and among the Central San Diego County Basins.

WATER SUPPLY FACILITIES AND OPERATIONS

The following provides a summary of the facilities within the Lower Santa Margarita River Basins, the San Luis Rey River Valley Basins, and the San Dieguito River Basins. Facilities include groundwater production wells, 114 acres of spreading basins, a seawater intrusion barrier operated by Camp Pendleton and a desalter operated by the City of Oceanside.

Active Production Wells

The following provides a description of the existing active municipal production wells in the Central San Diego County Basins. Data are summarized in **Table 22-4**.

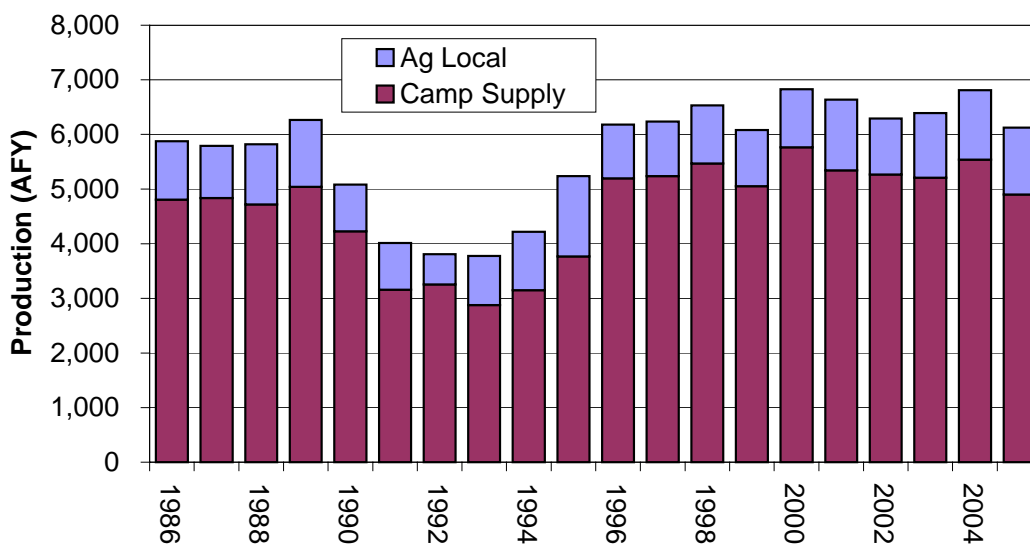
Lower Santa Margarita River Basins

According to Camp Pendleton, there are 15 wells in the Lower Santa Margarita River Basin, with 80 percent for domestic use and the remaining 20 percent of the production for agriculture.

The Santa Margarita River Watermaster reports the groundwater production for Camp Pendleton, as shown in **Figure 22-3**. This production excludes the adjacent Naval Weapons Station, which has received imported water from the Fallbrook Public Utility District since 1969.

Groundwater from the Upper Ysidora and Chappo Basins provides more than 90 percent of the supply of potable water for the southern portion of Camp Pendleton (groundwater outside the Lower Santa Margarita River Basin serves the northern portion of Camp Pendleton.). Camp Pendleton also uses groundwater from the Lower Ysidora Basin, primarily to irrigate agricultural lands leased to contracting agricultural businesses.

Figure 22-3
Historical Groundwater Production in the Lower Santa Margarita River Basin
Camp Pendleton



Source: Santa Margarita River Watermaster, 2006 **Water Year**

San Luis Rey River Valley Basins

A summary of the principal use and the approximate annual use of groundwater by basin is shown in **Table 22-4**.

Table 22-4
Summary of Production in Central San Diego County Basins

Category	Number of Wells	Estimated Production Capacity (AFY)	Average Production (AFY)	Well Operation Cost (\$/AF)		
Lower Santa Margarita River Basins						
Municipal	15		5,800			
Private	0					
San Luis Rey River Valley Basins						
Mission Basin						
• Municipal		Data not available	2,200	Data not available		
• Private			2,000			
Bonsall Basin						
• Municipal			0			
• Private			2,500			
Pala/Pauma Basin						
• Municipal			2,700			
• Private			5,000			
Moosa Canyon			Unknown			
Warner						
• Municipal			7,000			
• Private			Unknown			
San Dieguito River Basins						
San Dieguito Valley					2,500	
San Pasqual Valley					4,000	
Santa Maria			250			

Sources: Camp Pendleton, 2006; SDCWA, 1997; Ramona Municipal Water District, Urban Water Management Plan, 2005; Vista Irrigation District, 2006; City of San Diego, 2006

San Dieguito River Basins

There are no active municipal water wells in the San Dieguito Valley Basin. There are no existing municipal production wells in the San Pasqual Valley Basin. The Ramona Municipal Water District (RMWD) owns three wells in the Santa Maria Basin with a capacity of 330 gpm and a potential yield of 200 AFY. The RMWD wells are currently not used due to high nitrates and will require recertification to place back in service. However, local landowners are using groundwater extensively. A summary of the principal use and the approximate annual use of groundwater by basin in the San Dieguito River watershed is shown in **Table 22-4**.

Other Production

There are an unknown number of private wells throughout the Central San Diego County Basins. Available production data are summarized in **Table 22-4**.

ASR Wells

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

Spreading Basins

There are approximately 65 acres of spreading basins in the Central San Diego County Basins.

Lower Santa Margarita River Basins

A Camp Pendleton off-channel surface water spreading system, in operation since 1960, replenishes water pumped from the groundwater basins. This existing system consists of a steel sheet pile diversion weir constructed across the Santa Margarita River and an earthen channel to convey river diversions to a series of five interconnected groundwater recharge ponds and to Lake O’Neill. Lake O’Neill is a 1,680 AF reservoir located on Fallbrook Creek, a minor tributary to the Santa Margarita River. Most of the water stored in the lake is diverted from the nearby Santa Margarita River. Information on these spreading basins is shown in **Table 22-5**.

Table 22-5
Summary of Spreading Basins in the Lower Santa Margarita River Basins

Recharge Basins	Area (acres)	Recharge Capacity (cfs)	Recharge Capacity (AFY)	Source Water	Owner
Pendleton Diversion Ponds	45	Data not available	4,000	River	Camp Pendleton

Source: Camp Pendleton; USBR, Santa Margarita River Conjunctive Use Project, Pre-Feasibility Plan Formulation Study, 2005

San Luis Rey River Valley Basins

There are no spreading basins within the San Luis Rey River Valley Basins.

San Dieguito River Basins

There are no spreading basins in the San Dieguito River Basins.

Seawater Intrusion Barriers

There is one seawater intrusion barrier in the Central San Diego County Basins. The details are discussed below.

Lower Santa Margarita River Basins

Camp Pendleton operates the Red Beach seawater barrier using recycled water. This barrier has six injection wells. Camp Pendleton reports that this barrier is in the process of being shut down with the effluent to be sent to a new tertiary treatment plant near the city of Oceanside.

San Luis Rey River Valley Basins

There are no seawater intrusion barriers in the San Luis Rey River Valley Basins.

San Dieguito River Basins

There are no seawater barriers in the San Dieguito River Basins.

Desalters

There is one desalter in the Central San Diego County Basins. The details of this facility are described below.

Lower Santa Margarita River Basins

There are no desalters in the Lower Santa Margarita River Basins.

San Luis Rey River Valley Basins

The City of Oceanside's current local water supply source is the Mission Basin Groundwater Purification Facility (MBGPF) where brackish groundwater is extracted and desalted. The MBGPF is currently producing about 3 MGD, with a planned expansion to 6.37 MGD.

San Dieguito River Basins

There are no desalters in the San Dieguito River Basins.

GROUNDWATER LEVELS

Groundwater in the Central San Diego Basins is generally shallow with depths to groundwater ranging from near the ground surface to about 100 feet. Limited water level data are available – available data for each basin is discussed below.

Lower Santa Margarita River Basins

Camp Pendleton measures groundwater levels at four wells on a monthly basis. Depth to water ranges from 10 to 100 feet. Camp Pendleton reports that the basin is successfully operating within the prescribed range of management levels.

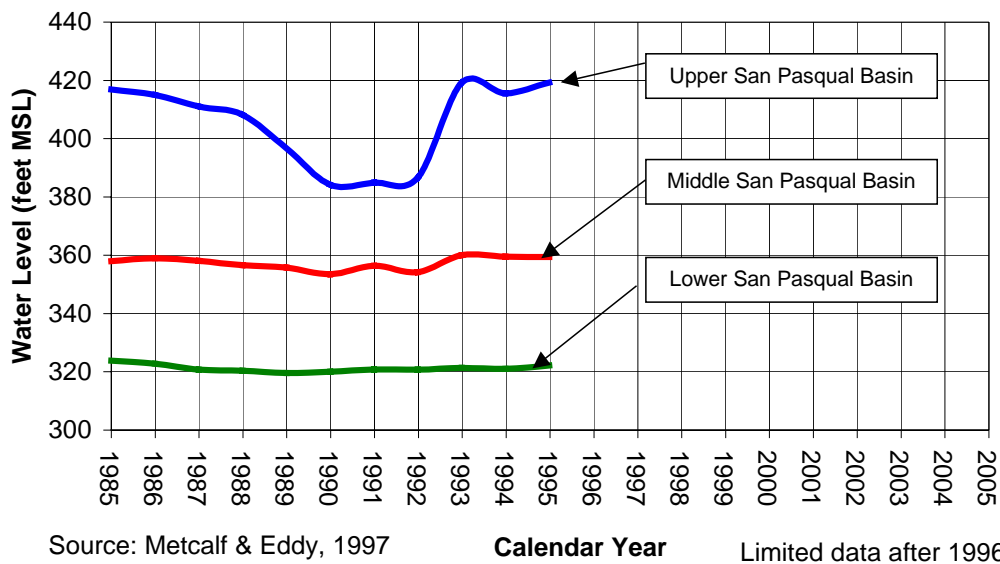
San Luis Rey River Valley Basins

Water levels in the basin declined drastically in the 1950s and 1960s due to groundwater development and over pumping. Since the advent of imported water sources, groundwater levels have risen to near pre-development levels and averages range from zero to 20 feet below land surface.

San Dieguito River Basins

The City of San Diego monitors the groundwater levels in nine wells in the San Pasqual Valley Basin. The historical groundwater levels for three of these wells are presented in **Figure 22-4**.

Figure 22-4
Historical Water Levels in the San Pasqual Valley Basin



GROUNDWATER QUALITY

The following section describes the water quality issues in the Central San Diego County Basins.

Groundwater Quality Monitoring

There is no formal groundwater quality-monitoring program for the Central San Diego County Basins. Wells are monitored as required under Title 22.

Groundwater Contaminants

Constituents of concern in the Central San Diego Basins include: total dissolved solids (TDS), magnesium, sulfate, chloride, fluoride, iron, manganese and selenium. Other constituents of regional concern including nitrate, volatile organic compounds (VOCs) and perchlorate are also summarized in **Tables 22-6, 22-7 and 22-8**.

Lower Santa Margarita River Basins

Constituents of concern for the Lower Santa Margarita River Basin are summarized in **Table 22-6**. Groundwater in the northwestern part of the basin is largely suitable for domestic and irrigation uses. Groundwater in the southwestern part of the basin is marginal to inferior for domestic and irrigation uses. Magnesium, sulfate, chloride, nitrate, and TDS concentrations are locally high for domestic use; whereas, chloride, boron, and TDS concentrations are locally high for irrigation use.

San Luis Rey River Valley Basins

Constituents of concern in the San Luis Rey River Valley Basins are shown in **Table 22-7**.

San Dieguito River Basins

Constituents of concern in the San Dieguito River basins are presented in **Table 22-8**.

Blending Needs

Data regarding blending needs are not available for the Central San Diego County Basins.

Groundwater Treatment

The following describes the groundwater treatment activities in the Central San Diego County Basins.

Lower Santa Margarita River Basins

Camp Pendleton operates iron and manganese treatment plants treating the groundwater used for municipal uses.

Table 22-6
Summary of Constituents of Concern in the Lower Santa Margarita River Basins

Constituent	Units	Range	Description
TDS Secondary MCL = 500	mg/L	325 to 1,260	In 1956, TDS concentrations ranged as high as 337 to 9,030 mg/l.
Nitrate (as N) Primary MCL = 10	mg/L	0.1 to 8	Meets drinking water standards
VOCs (TCE and PCE) Primary MCL for TCE = 5 Primary MCL for PCE = 5	µg/L	Data not available	Data not available
Perchlorate Notification level = 6	µg/L	ND	Perchlorate not detected
Magnesium No MCL	mg/L	23 to 39	Magnesium, sulfate, chloride, nitrate, and TDS concentrations are locally high for domestic use; whereas, chloride, boron, and TDS concentrations are locally high for irrigation use.
Sulfate Secondary MCL = 250	mg/L	100 to 400	
Chloride Secondary MCL = 250	mg/L	10 to 335	
Fluoride Primary MCL = 2	mg/L	0.11 to 6.4	

Source: USBR, 2005

Table 22-7
Summary of Constituents of Concern in San Luis Rey River Valley Basins

Constituent	Units	Range	Description
TDS Secondary MCL = 500	mg/l	168 to 3,400	TDS concentrations in the Mission Basin range from 500 to 2,000 mg/l. TDS concentrations in Bonsall Basin range from 600 to 3,400 mg/l. In Pala/Pauma Basins, TDS ranges from 200 to 900 mg/l. For Moosa Canyon Basin, TDS ranges from 650 to 1,380 mg/l. TDS in Warner Basin ranges from 168 to 638 mg/l.
Nitrate (as N) Primary MCL = 10	mg/l	Data not available	May not comply with Drinking Water Standards in Pala/Pauma Basins.
VOCs (TCE and PCE) Primary MCL for TCE = 5 Primary MCL for PCE = 5	µg/L	Data not available	Data not available
Perchlorate Notification level = 6	µg/L	ND	Perchlorate not detected
Iron Secondary MCL = 0.3	mg/l	Data not available	May not comply with Drinking Water Standards in Mission Basin.
Manganese Secondary MCL = 0.05	mg/l	Data not available	May not comply with Drinking Water Standards in Mission Basin.

Source: SDCWA 1997

Table 22-8
Summary of Constituents of Concern in the San Dieguito River Basins

Constituent	Units	Range	Description
TDS Secondary MCL = 500	mg/L	320 to 27,000	TDS concentrations in the lower portions of the San Dieguito Basin range from 1,000 to 27,000 mg/l. In the San Pasqual Basin, TDS ranges from 600 to 2,500 mg/L. TDS concentrations in Santa Maria Basin range from 320 to 1,680 mg/L.
Nitrate (as N) Primary MCL = 10	mg/L	0.2 to 385	Nitrate found in Santa Maria Basin wells owned by Ramona Municipal Water District (RMWD) forced shutdown of wells. Nitrate found in San Pasqual Valley Basin.
VOCs (TCE and PCE) Primary MCL for TCE = 5 Primary MCL for PCE = 5	µg/L	Data not available	Data not available
Perchlorate Notification level = 6	µg/L	ND	Perchlorate not detected
Selenium Primary MCL = 50	mg/L	Data not available	Selenium found in Santa Maria basin wells owned by RMWD forced shutdown of wells.

Source: SDCWA, 1997; City of San Diego, 2006

San Luis Rey River Valley Basins

As described above, the city of Oceanside currently operates its Mission Basin Groundwater Purification Facility (MBGPF) that uses a reverse osmosis treatment process for desalination and for removal of iron and manganese. Oceanside is in the process of expanding the facility from three MGD to 6.37 MGD.

San Dieguito River Basins

Groundwater is not treated in the San Dieguito River Basins.

CURRENT GROUNDWATER STORAGE PROGRAMS

The following describes the current groundwater storage programs in the Central San Diego County Basins.

Lower Santa Margarita River Basins

There are no groundwater storage agreements in the Lower Santa Margarita River Basins.

San Luis Rey River Valley Basins

There are currently no groundwater storage programs within the San Luis Rey groundwater basins. The Final Lower San Luis Rey River Valley Groundwater Storage and Recovery Feasibility Study (March 2005) completed for SDCWA identified the potential use of groundwater storage for the City of Oceanside, Carlsbad MWD, and Rainbow MWD.

San Dieguito River Basins

There are no groundwater storage agreements in the San Dieguito River Basins.

BASIN MANAGEMENT CONSIDERATIONS

The following provides a brief description of the basin management considerations.

Lower Santa Margarita River Basins

- The basin has high levels of iron and manganese requiring treatment for potable use. According to Camp Pendleton, the base pumps only the amount needed to satisfy demand and facility needs have been factored into the estimate of useable storage capacity.

San Luis Rey River Valley Basins

- High TDS levels are found in the groundwater of all the basins, with lower groundwater TDS values found in certain areas of some of the basins allowing for domestic use. Still, many locations may require desalination treatment prior to use as a domestic water supply. The City of Oceanside operates a groundwater desalination facility (Mission Basin Groundwater Purification Facility.)
- Recharge is primarily limited to streambeds as there are no spreading basins. It is unclear if basins could be readily replenished, through natural or artificial means to allow increased pumping under conjunctive use programs.

San Dieguito River Basins

- There are high TDS levels in all three basins and high nitrate and selenium levels in the Santa Maria Basin that limit municipal use without some form of treatment.

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