

Chapter IV – Groundwater Basin Reports Other Basins Not Covered

The following section provides a brief description of groundwater basins within the Metropolitan service area, which because of limited available data or groundwater resources, are not covered in detail in this report. These basins include:

Los Angeles County

- Spadra Basin
- Malibu Valley Basin

Orange County

- La Habra Basin

Ventura County

- Conejo Valley Basin
- Tierra Rejada Basin
- Thousand Oaks Basin (portion in Los Angeles County)
- Hidden Valley Basin
- Simi Valley Basin
- Russell Valley Basin (portion in Los Angeles County)

San Diego County

- San Marcos Basin
- Escondido Valley Basin
- Batiguitos Lagoon Basin
- San Elijo Valley Basin
- Poway Valley Basin
- El Cajon Basin

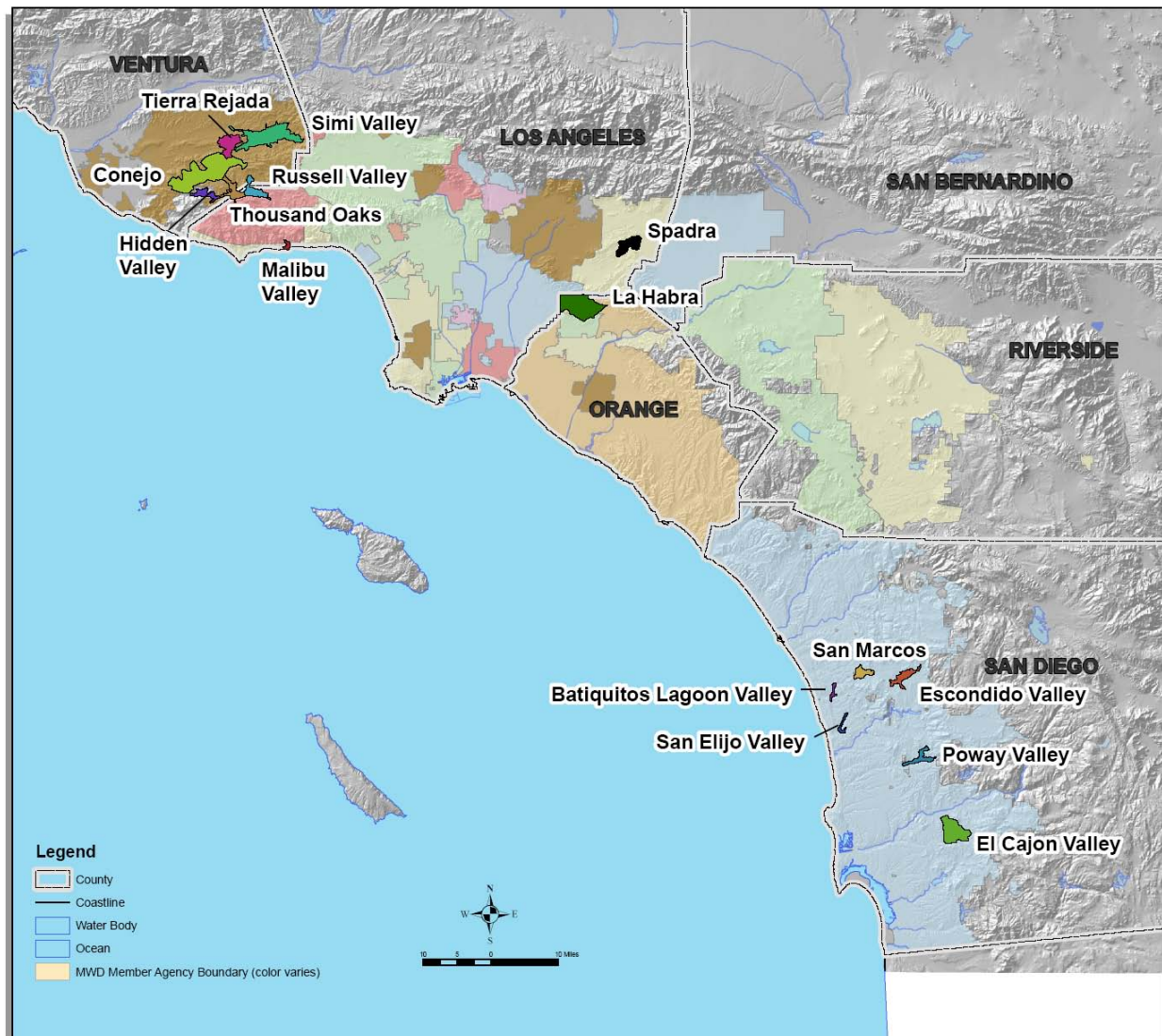
The locations of these basins are shown on **Figure 24-1**. Available data for each basin are summarized below.

SPADRA BASIN

The Spadra Basin is located in Los Angeles County south of the Six Basins within the city of Pomona. The Spadra Basin underlies the service areas of Metropolitan member agency Three Valleys Municipal Water District (Three Valleys MWD). The Spadra Basin is currently unmanaged. Primary producers are the City of Pomona and Cal-Poly Pomona. The conversion of agricultural land to urban in the Spadra Basin and the lining of San Jose Creek have limited groundwater recharge in the Spadra Basin. Estimated groundwater production capacity is approximately 1,500 AFY with an average production of 850 AFY (Three Valleys MWD, 2002b).

Based upon available water quality data from 1990 to 2002, concentrations of TDS and nitrate have been above applicable MCLs in the Spadra Basin. TDS concentrations during this period ranged from about 440 mg/L to 780 mg/L. Nitrate concentrations ranged from 1 mg/L to about 17 mg/L. Perchlorate, trichloroethylene (TCE) and tetrachloroethylene (PCE) have also been detected in various wells in this Basin. Maximum concentrations of perchlorate have been 11 µg/L (Regional Board, 2006). Water quality may limit the ability to store and extract water in this basin.

Figure 24-1
Map of Basins not Covered



MALIBU VALLEY BASIN

The Malibu Valley Basin is a small alluvial basin located along the Los Angeles County coastline in the Malibu area. The basin is within the service areas of West Basin MWD and Las Virgenes MWD and served by the Los Angeles County Department of Public Works (LACDPW). Groundwater occurs primarily in alluvial, beach and terrace deposits. In addition, groundwater may be present in some sandstone rock formations underlying the recent deposits (Malibu Bay Company, 2003). Thickness of the alluvium ranges from 90 to 140 feet (DWR, 2004). Groundwater is as shallow as five feet but increases inland. Prior to 1965, when imported water was introduced to the area, groundwater was the primary source of drinking water in the Malibu area. In the past, there were more than 30 private wells in the Malibu area. In addition, public water supply wells were operated by the Malibu Water Company and LACDPW. All known wells have been abandoned. Limited water quality data are available for this basin; however, historical data seem to suggest TDS concentrations of 1,310 mg/L and evidence for historical seawater intrusion (DWR, 2004). According to LACDPW, the Malibu Valley Basin lacks capability to produce sufficient water supplies and is not included in their water supply planning (LACDPW, 2005).

LA HABRA BASIN

The La Habra Basin is located in northern Orange County, north of the Orange County Basin, within the cities of La Habra and Brea. The La Habra Basin underlies Metropolitan member agencies Municipal Water Districts of Orange County (MWDOC) and the City of Fullerton. It comprises a shallow alluvial depression between the Coyote Hills and the Puente Hills. Little groundwater production occurs in the La Habra Basin due to low transmissivity and poor water quality (high total dissolved solids, or TDS, sulfates, nitrates and color). Potable groundwater production out of the basin has been about 1,200 AFY over the past several years by the City of La Habra. Treatment consists of air-stripping to remove hydrogen sulfide and addition of hexametaphosphate to sequester the iron and manganese; the City of La Habra has plans to expand production to a total of about 2,400AFY. (MWDOC, 2006). Hydrogeologic studies have indicated that 2,200 to 5,500 AFY of groundwater flows out of the La Habra Basin southerly into the Orange County Basin and westerly into Central Basin (OCWD, 2004). The basin is currently unmanaged.

CONEJO VALLEY BASIN

The Conejo Valley Basin underlies the Conejo Valley in southern Ventura County. It is within the service area of Calleguas Municipal Water District (Calleguas MWD). The Conejo Valley Basin is currently unmanaged. The primary water-bearing units are unconfined alluvium and the sedimentary and volcanic rocks of the Modelo, Topanga and Conejo Formations. Average yield is about 100 gpm and is used primarily for agricultural irrigation. The alluvium is generally only a few feet thick but can be up to 60 feet thick (DWR, 2004) and is not a significant source of groundwater. The sedimentary and volcanic rocks, the primary sources of groundwater, can reach a combined thickness of about 19,500 feet. Total storage capacity of this basin has been estimated to be about 7,106 AF (Panaro, 2000;DWR, 2004). In 1999, the available storage in this basin was estimated to be about 1,776 AF (Panaro 2000, DWR, 2004). Recent pumping was

estimated to be less than 100 AFY (Panaro 2000; DWR, 2004). Available groundwater quality data suggest that the quality of the water produced from the sedimentary and volcanic units is generally poor. Future use of this basin is limited.

TIERRA REJADA BASIN

The Tierra Rejada Basin is near the headwaters of the Arroyo Santa Rosa in southern Ventura County. It is within the service area of Calleguas MWD. The Tierra Rejada Basin is currently unmanaged. The primary water-bearing units are unconfined alluvium and the sedimentary and volcanic rocks of the Modelo, Topanga and Conejo Formations. The alluvium is only found in the center of the basin and is estimated to be only about 25 thick and is not a significant source of groundwater (DWR, 2004). The sedimentary and volcanic rocks can reach a combined thickness of more than 8,500 feet. Average well yield is approximately 172 gpm. Total storage capacity of this basin is estimated be approximately 39,320 AF. In 1999, about 9,830 AF was available for storage (DWR, 2004; Panaro 2000). Annual production from wells is estimated to be about 1,500 AFY and is generally used for irrigation. According to DWR (2004), maximum TDS concentrations in 1996 were 930 mg/L and nitrate concentrations were 16 mg/L and high nitrate concentrations could occur locally in the basin.

THOUSAND OAKS BASIN

The Thousand Oaks Basin underlies a small valley between Lake Sherwood and Thousand Oaks in southeastern Ventura and western Los Angeles Counties. It is located with the service areas of Calleguas MWD and Las Virgenes Municipal Water District (Las Virgenes MWD). The Thousand Oaks Basin is currently unmanaged. Groundwater is generally found in the unconfined alluvium, although some groundwater is found in the underlying sedimentary rocks of the Modelo and Topanga Formations and fractures within the volcanic Conejo Formation. Total storage capacity of the basin is estimated to be about 130,000 AF (DWR, 2004) and had an available storage space in 1999 of about 17,000 AF (DWR 2004; Panaro, 2000). Groundwater quality is generally poor with TDS concentrations ranging from 1,200 to 2,300 mg/L (DWR, 2004). Municipal production is limited.

HIDDEN VALLEY BASIN

The Hidden Valley Basin underlies the Hidden Valley in southwestern Ventura County. It is within the service area of the Metropolitan member agency Calleguas MWD. The Hidden Valley Basin is unmanaged. The basin is bounded by the Santa Monica Mountains and drains into Sherwood Lake. Produced groundwater primarily comes from fractures with the volcanic rocks of the Conejo Formation and the overlying alluvium (DWR, 2004). Water level data suggest that the basin responds rapidly to precipitation. Water quality has been reported to be good to fair with TDS concentrations below 800 mg/L (DWR, 2004). Limited additional data are available for this basin.

SIMI VALLEY BASIN

The Simi Valley Basin underlies the Simi Valley in southeastern Ventura County. It is within the service areas of Metropolitan member agency Calleguas MWD. The Simi Valley Basin is unmanaged. The basin is bounded on the north and northeast by the Santa Susana Mountains and the Simi fault and on the south and southwest by the Simi Hills. The primary water-bearing unit is unconfined alluvium. The maximum thickness is estimated to be approximately 730 feet (DWR, 2004). Total estimated groundwater storage is approximately 180,000 AF (Panaro, 2000; DWR, 2004). Total space available in 1999 was estimated to be about 8,000 AF (Panaro, 2000; DWR, 2004). Pumping is estimated to be less than 5,500 AFY (Panaro, 2000; DWR, 2004). Based upon data from public supply wells between 1990 and 1998, the TDS of the groundwater within the Simi Valley Basin ranges from about 580 mg/L to 820 mg/L (Regional Board, 2006). According to DWR (2004), there are some problems with volatile organic compounds in shallower portions of the basin and TDS concentrations can reach up to 1,580 mg/L. Groundwater from the Simi Valley Basin is generally not utilized for municipal supply.

RUSSELL VALLEY BASIN

The Russell Valley Basin is a relatively small alluvial basin within northwestern Los Angeles and southern Ventura County. It underlies the service area of Metropolitan member agencies Calleguas MWD and Las Virgenes MWD. The basin is bounded by the Santa Monica Mountains to the north, south and east and the Thousand Oaks Basin to the west. The Russell Valley Basin is currently unmanaged. The primary water-bearing formation is unconfined alluvium but some groundwater is extracted from the underlying sedimentary and volcanic rocks of the Conejo Formation. The alluvium average about 35 to 55 thick (Las Virgenes MWD, 2005). It is estimated that the alluvium may have a total storage capacity of 11,000 AF (Las Virgenes MWD, 2005). Wells within the Conejo Formation typically yield about 200 to 400 gpm (Las Virgenes, 2005). Storage space available in the Conejo Formation is currently unknown but may range from 30,000 to 80,000 AF. Production from the Russell Valley Basin is estimated to be about 600 AFY (DWR, 2004) and is not used for municipal supply. The TDS concentrations in the Russell Valley Basin usually range from 800 to 1,200 mg/L but have also been reported to range from 400 to 2,800 mg/L. TDS and sulfate both exceed their MCL for some wells in the basin. Future utilization of this basin for municipal supply is limited.

SAN MARCOS VALLEY BASIN

The San Marcos Valley Basin is a small groundwater basin located in western part of central San Diego County. The basin underlies the service area of the San Diego County Water Authority (SDCWA). San Marcos Creek drains this valley southwestward into Lake San Marcos. The principle water bearing materials are weathered bedrock and alluvium, with the alluvium reaching a thickness of 175 feet (DWR 2004). The basin is unmanaged. Total storage capacity, groundwater in storage, and annual groundwater production are unknown. Wells in the basin yield as much as 60 gpm from the alluvium. The basin is recharged by percolation of rainfall and ephemeral stream flow, with some additional recharge potentially occurring from water applied to landscaping. TDS concentrations measured prior to 1967 ranged

between 500 and 750 mg/L. Groundwater is suitable for domestic use and marginal irrigation in the northern part of the basin, but inferior in the south (DWR 1967).

BATIQUITOS LAGOON VALLEY BASIN

The Batiquitos Lagoon Valley Basin underlies Green Valley and San Marcos Creek Valley in the western part of central San Diego County, within the service area of SDCWA. San Marcos and Encinitas Creeks drain the valleys westward into Batiquitos Lagoon. The primary water-bearing unit is alluvium deposits that reach a maximum thickness of about 100 feet (DWR 1967). The basin is unmanaged. Total storage capacity, groundwater in storage, and annual groundwater production are unknown. Average TDS content is about 1,280 mg/L with a range from about 788 to 2,362 mg/L. The groundwater was rated inferior for irrigation because of high chloride content and marginal for domestic use because of high sulfate and TDS concentrations (DWR 1967).

SAN ELIJO VALLEY BASIN

The San Elijo Valley Basin is located in the western part of central San Diego County and underlies the service area of SDCWA. Escondido Creek flows occasionally through the upper northeast portions of the valley, discharging into San Elijo Lagoon. The primary water bearing units consist of alluvium and part of the sedimentary La Jolla Group. Well yields range from 10 to 1,800 gpm. Additionally, the Santiago Peak volcanics have well yields generally less than two gpm, but may reach 125 gpm (DWR 2004). The basin alluvium has an average thickness of less than 50 feet. The La Jolla Group has a maximum thickness of 1,650 feet (DWR 1967). Recharge of the alluvial aquifer is primarily from percolation in Escondido Creek, with return irrigation waters and water from residential use as additional recharge contributors. The basin is unmanaged. The total groundwater storage capacity and annual groundwater production are unknown. Groundwater in storage was estimated to be approximately 8,500 AF in 1983. TDS concentration ranges from 1,170 to 5,090 mg/L, with concentrations lowest in the eastern part of the basin and increasing toward the west (DWR 2004).

ESCONDIDO VALLEY BASIN

The Escondido Valley Basin is located in central San Diego County and is within the service area of SDCWA. The valley is drained by Escondido Creek. The primary water-bearing deposits include alluvium and weathered bedrock. The alluvium, primarily confined to Escondido Creek, is probably not thick enough to be water bearing. Groundwater production is largely from the weathered bedrock, however, many wells extract groundwater from fractures in the underlying crystalline rocks (DWR 1967). Groundwater is generally found at less than 50 feet in depth (DRW 1967). The basin is unmanaged. The groundwater storage capacity is estimated at 24,000 AF (DWR 1975). Groundwater in storage as well as annual production is unknown. Well yields are as high as 190 gpm, averaging 50 gpm (DWR 1975). TDS content ranges from 250 to more than 5,000 mg/L (DWR 1967). Local sources of groundwater are categorized as suitable to inferior for domestic use, with the inferior water typically containing high nitrates, TDS, or sulfate content (DWR 1967).

POWAY VALLEY BASIN

The Poway Valley Basin is a small groundwater basin located in central San Diego County within the service area of SDCWA. The basin is drained by Poway and Los Panasquitos Creeks to the Pacific Ocean. The principal water-bearing units include alluvium and weathered bedrock. The alluvium thickness ranges from 10 to 75 feet, with an average of 40 feet. Weathered bedrock reaches about 70 feet in thickness (DWR 1967). A ridge of impermeable Santiago Peak Volcanics along the western basin boundary inhibits the flow of groundwater to the west and raises the water level in the western portion of the basin yielding a spring in the past. Natural recharge is from direct precipitation on the valley floor and infiltration along Poway Creek. Septic tank effluent and irrigation waters provide some recharge. Groundwater flow is generally to the west. The basin is unmanaged. Groundwater storage capacity and annual groundwater production are unknown. Stored groundwater was estimated at 2,330 AF. TDS content ranges from about 750 to 1,500 mg/L (DWR 1967). Water from one public well had a TDS content of 610 mg/L. The high chloride content results in marginal to inferior ratings for irrigation use in some parts of the basin (DWR 1967). A marginal rating for domestic use in some parts of the basin is due to high TDS content (DWR 1967).

EL CAJON BASIN

The El Cajon Basin is in southern San Diego County and within the service area of SDCWA. The basin is within the San Diego River watershed and the basin drains to the north to the San Diego River. Water-bearing materials in the basin include alluvium, the Poway Conglomerate, and an older underlying sandy siltstone unit (DWR 1986). In addition, water is produced from the underlying fractured crystalline rocks. The alluvium ranges to 50 feet thick, with wells yielding as much as 250 gpm (DWR 1986). The Poway Conglomerate ranges to more than 300 feet thick. The sandy siltstone to mudstone underlies the Poway Conglomerate and reaches a maximum of about 325 feet thick (DWR 1986). Recharge is from percolation of precipitation, with lesser contributions from underflow from underlying fractured crystalline rocks. Additional recharge is from return of applied irrigation water and percolation of septic tank effluent. Groundwater moves in a northwestward direction towards the San Diego River. The basin is unmanaged. Total basin capacity is estimated to be about 32,500 AF (DWR 1986). Stored groundwater was estimated in 1984 to be about 27,800 AF (DWR 1986). Subsurface outflow to the northwest is estimated to be 100 to 140 AFY (DWR 1986). Annual groundwater production is unknown. Well yields ranged to 250 gpm (DWR 1986). TDS concentrations range from 637 to 3,960 mg/L with an average value of 1,640 mg/L (DWR 1986). Water from one public well had a TDS of 2,340 mg/L. Groundwater analyzed in 1984 had nitrate concentrations up to 185 mg/L, with a mean concentration of 69 mg/L. Chloride concentrations ranged from 186 to 1,910 mg/L, with a mean concentration of 412 mg/L. Sulfate concentrations ranged from 78 to 680 mg/L, with a mean concentration of 345 mg/L (DWR 1986).

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