

## Coyote Wells Valley Groundwater Basin

- Groundwater Basin Number: 7-29
- County: San Diego, Imperial
- Surface Area: 64,000 acres (100 sq. miles)

### Basin Boundaries and Hydrology

The Coyote Wells Valley Groundwater Basin is located near the international border with Mexico in the western Yuha Desert west of Imperial Valley.

Average annual precipitation is about 5 inches.

The basin is bounded on the north by impermeable metasedimentary rocks of the Coyote Mountains and by the Elsinore fault zone. Impermeable rocks of the Jacumba Mountains bound the basin on the west and southwest. The southeastern boundary is formed by the United States-Mexico border. The eastern boundary is a roughly north-south line from Superstition Mountain through the Yuha Buttes to the international border. Part of the northeastern boundary is formed by a surface drainage divide connecting the Coyote Mountains with Superstition Mountain.

Palm Canyon Wash and Coyote Wash provide the main surface drainages for the basin (DWR 1973; Skrivan 1977).

### Hydrogeologic Information

#### ***Water Bearing Formations***

Holocene and Pleistocene alluvial deposits form the main water bearing units found in the basin. The Pleistocene sediments are in part overlain by Holocene alluvium in the lower part of the Coyote Wash drainage system. Well logs indicate unconsolidated sediment reaching 650 feet thick. Water bearing zones are most productive in the Holocene alluvium from 100 to 300 feet below ground surface (DWR 1973).

Unconfined shallow groundwater exists in parts of the basin, but the quality of the water is poor. Well logs indicate confined groundwater conditions for several wells drilled near Ocotillo and Coyote Wells (DWR 1973).

#### ***Recharge Areas***

The principal recharge is derived from percolation of precipitation on the valley and ephemeral runoff from the surrounding mountains (Skrivan 1977) through many of the larger washes (DWR 1973). In addition, infiltration basins near Plaster City were being used in 1976 to add to groundwater recharge (Skrivan 1977).

#### ***Groundwater Level Trends***

Prior to 1973, groundwater levels were declining because pumping exceeded the low natural recharge (DWR 1973). Groundwater flows generally southeastward through the basin (Skrivan 1977).

#### ***Groundwater Storage***

**Groundwater Storage Capacity.** 1,700,000 af (DWR 1975).

**Groundwater in Storage.** Groundwater in storage was calculated to be about 1,000,000 af in 1973 (DWR 1973).

### **Groundwater Budget (Type A)**

A recent water budget for this basin is not available. However, Skrivan (1977) produced a groundwater budget for 1975. Skrivan estimated that infiltration of precipitation supplies an average of 2,600 af/yr of recharge to the basin. Pumping was estimated at about 900 af and evapotranspiration was estimated at 300 af for 1975 (Skrivan 1977). Groundwater loss by underflow was estimated at 1,450 af to Mexico and 450 af to the Imperial Valley Groundwater Basin for 1975 (Skrivan 1977). Using these values, Skrivan (1977) calculated that the Coyote Wells Groundwater Basin was overdrafted about 500 af in 1975. DWR (1975) estimated natural runoff for the basin to be 300 af/year.

### **Groundwater Quality**

**Characterization.** The dominant groundwater type for the productive parts of the basin is sodium bicarbonate-chloride (DWR 1973). Total dissolved solids content ranges from 750 to 1,240 mg/L in shallow wells to 300 to 450 mg/L in deeper wells (DWR 1973). Electrical conductance values for sampled wells range from 500 to 600  $\mu$ mhos (DWR 1967; 1973).

**Impairments.** Fluoride levels in some wells are as high as 3.5 mg/L and may be related to pre-Quaternary sedimentary deposits or from thermal water (85 to 90 degrees Fahrenheit) associated with an extension of the Elsinore fault zone or both (DWR 1973).

### **Well Characteristics**

| Well yields (gal/min) |        |          |
|-----------------------|--------|----------|
| Municipal/Irrigation  | Range: | Average: |
| Total depths (ft)     |        |          |
| Domestic              | Range: | Average: |
| Municipal/Irrigation  | Range: | Average: |

### **Active Monitoring Data**

| Agency  | Parameter                      | Number of wells<br>/measurement frequency |
|---|--------------------------------|---|
| Unknown   | Groundwater levels             | 25  |
| Unknown   | Miscellaneous<br>water quality | 6   |
| Department of<br>Health Services and<br>cooperators | Title 22 water<br>quality      | 9   |

## Basin Management

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Groundwater management:

Water agencies

|         |         |
|---------|---------|
| Public  | Unknown |
| Private | Unknown |

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## References Cited

California Department of Water Resources (DWR). 1967. *Ground Water Occurrence and Quality: San Diego Region*. Bulletin No. 106-2. 106 p.

\_\_\_\_\_. 1973. *Ground Water Quality Problem, Coyote Well Hydrologic Unit: November 1 and 29, 1972*. Memorandum Report for California Regional Water Quality Control Board.

\_\_\_\_\_. 1975. *California's Ground Water*. Bulletin No. 118. 135 p.

Skrivan, J. A. 1977. *Digital-Model evaluation of the Ground-Water Resources in the Ocotillo-Coyote Wells Basin, Imperial County, California*. U.S. Geological Survey. Water-Resources Investigations 77-30. 50 p.

## Additional References

California Department of Public Works. 1954. *Ground Water Occurrence and Quality, Colorado River Basin Region*. Water Quality Investigations Report No. 4.

## Errata

Changes made to the basin description will be noted here.