Garcia River Valley Groundwater Basin

- Groundwater Basin Number: 1-20
- County: Mendocino
- Surface Area: 2,240 acres (3.5 square miles)

Basin Boundaries and Hydrology

Garcia River Valley is an irregular, west- to northwest-trending coastal drainage basin situated within the Coast Ranges of southwestern Mendocino County and located approximately 1.5 miles north of the Town of Point Arena. Garcia River Valley Groundwater Basin is approximately 4 miles in length and varies in width from about 0.1 to 0.8 miles. The Garcia River Valley Groundwater Basin is defined by the areal extent of Quaternary Alluvium and Sand Dune Deposits along the coast north of Point Arena. Quaternary Terrace Deposits and bedrock of the Miocene Gallaway-Skooner Gulch Formations and Paleocene German Rancho Formation bound these deposits along the east side. This groundwater basin is bounded on the southwest (near Point Arena) by the Miocene Monterey Formation and on the west by the Pacific Ocean. This groundwater basin transects the Fort Bragg Terrace Area Groundwater Basin north of Point Arena and the Fort Ross Terrace Area south of Point Arena. The San Andreas Fault Zone trends through the Garcia River Valley Groundwater Basin area in a northwest direction before it heads offshore north of Point Arena (Wagner and Bortugno 1982).

The Garcia River Valley Groundwater Basin is drained to the west by the Garcia River and its tributaries and Brush and Lagoon Creeks before entering the Pacific Ocean north of Point Arena. Precipitation in this basin averages about 40 inches annually.

Hydrogeologic Information

Water-Bearing Formations

Significant water-bearing formations that occur in the Garcia River Valley Groundwater Basin include Quaternary Alluvium and Sand Dune Deposits. Consolidated Tertiary and Mesozoic bedrock and Quaternary Terrace Deposits surround and underlie the groundwater basin. Due to the bedrock's consolidated nature, it is essentially non-water bearing except for areas with significant fracture porosity. The water-bearing characteristics and conditions of the Quaternary Terrace Deposits are discussed separately in the Fort Bragg Terrace Area Groundwater Basin (north of Point Arena) and Fort Ross Terrace Deposits Groundwater Basin (south of Point Arena) summaries. Information on water-bearing formations and groundwater conditions of the Quaternary Alluvium and Sand Dunes were taken from DWR (1958, 1982).

Alluvium and River Channel Deposits. These deposits are Holocene in age and consist largely of unconsolidated silts, gravels, clays, and sands. These deposits are exposed in the active river channel and floodplain of the Garcia River Valley and Brush and Lagoon Creeks near Manchester. Limited data suggests the alluvium in the smaller valleys in Mendocino County averages 10 to 15 feet thick, but may be 100 feet or more in places within the coastal drainages (DWR 1982, 1985). The maximum thickness of

these deposits is unknown. No published well yield data was identified for wells in this area; however, wells drilled in the small alluvial valleys in Mendocino County have proven unproductive because of low permeability. Groundwater in the alluvial deposits is typically unconfined but may be semi-confined locally. No published specific yield data for alluvium in this area are available.

Beach and Dune Deposits. These units are Holocene in age. The beach deposits consist of clean, well-sorted sands with minor amounts of well-rounded pebbles. Associated dune deposits are clean, well-sorted, windblown sand derived from the beach deposits. These deposits are estimated to average about 50 feet thick and extend for approximately 3 miles up the coast from Point Arena. The maximum thickness of these units is not known. There are no published data for well yield or specific yield for wells in this unit. Groundwater most likely occurs under unconfined conditions within these deposits.

Groundwater Level Trends

No groundwater level data available.

Groundwater Storage

Groundwater Storage Capacity. Groundwater storage capacity was estimated for an area of alluvial materials north of Point Arena by DWR (1982). In this study, the alluvial materials encompassed an area of 3,830 acres. Assuming an average saturated thickness of 30 feet, a specific yield of 12 percent, and a 2-foot spring-to-fall decline of the water table, these alluvial deposits represented a groundwater storage reservoir with a 13,780 af capacity. Because of the continual recharge from the surface flow of the perennial streams, a spring-to-fall change in storage would not exceed about 8 percent. Since this storage capacity estimate is for an area of 3,830 acres which is significantly larger than the currently defined groundwater basin size (2,240 acres), it overestimates the capacity and therefore, is not representative of the groundwater storage capacity of this basin.

Groundwater in Storage. No data available.

Groundwater Budget (Type C), No data available.

Groundwater Quality

Characterization. There are no recently published groundwater quality data available; however, a sample collected in 1953 from a domestic well in this basin indicated a sodium-bicarbonate water type with a TDS of 326 ppm (DWR 1958).

Impairments. It is reported that elevated concentrations of iron and reduced sulfide are relatively common occurrences in groundwater along the coastal areas between Fort Bragg and the Point Arena (DWR 1982). Since this basin is in connection with the Pacific Ocean, seawater intrusion may be reasonably expected as a potential problem.

Well Production characteristics

	Well yields (gal/min)	
Municipal/Irrigation	No data is available.	
	Total depths (ft)	
Domestic	Range: 34 – 300	Average: 119 (Based on 10 well completion reports)
Municipal/Irrigation		One well - 55 feet total depth (l well completion report)

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
DWR (incl. Cooperators)	Groundwater levels	None
DWR (incl. Cooperators)	Mineral, nutrient, & minor element.	None
Department of Health Services	Coliform, nitrates, mineral, organic chemicals, and radiological.	None

Basin Management

Groundwater management:	No groundwater management plans were identified.
Water agencies	
Public	Mendocino County Water Agency.
Private	Point Arena Water Works

Selected Bibliography

California Department of Water Resources (DWR) 1958. Recommended Water Well Construction and Sealing Standards, Mendocino County. Bulletin No. 62 – November.

California Department of Water Resources (DWR) 1982. Mendocino County Coastal Ground Water Study. Northern District. June.

California Department of Water Resources (DWR) 1985. Town of Mendocino Ground Water Study. Northern District. June.

Wagner, D.L., and E.J. Bortugno 1982. Geologic Map of the Santa Rosa Quadrangle, California, 1:250,000. California Division of Mines and Geology. Regional Geologic Map Series.

Errata

Changes made to the basin description will be noted here.