

GEOLOGIC SETTING

Butte County Department of Water and Resource Conservation. Paradise Ridge Memorandum of Understanding Summary Status Report. Butte County: May 31, 2001.³⁹

The Tuscan Formation, which is the major source of groundwater throughout the foothills between the Sacramento River Valley and the mountains to the east, underlies the Lime Saddle Ridge area. The Tuscan Formation was originally deposited in a series of mudflows and this extensive formation acts as recharge area for the corresponding formation in the valley below. Transmissions are quite low in the foothills and are very low in the Lime Saddle area. They are significantly higher farther north in Magalia.

Camp Dresser & McKee, Inc. Basin Management Objective Development Packet, Cherokee. Technical Memorandum. Butte County: May 2004.¹³

The document describes the composition, water-bearing potential, thickness, and location of geologic formation from youngest (shallowest) to oldest (deepest), including Quaternary Alluvium, Basin Deposits, the Modesto Formation, Tuscan Unit C, and Tuscan Unit B.

The Sacramento groundwater basin is filled with sediments deposited in marine and terrestrial environments. The older, marine sediments usually contain saline or brackish water, and the younger, terrestrial sediments contain fresh water. The sediments were deposited on metamorphic and granitic rocks that are exposed at the edges of the valley. It further describes the principal groundwater bearing units of the groundwater basin.

Camp Dresser & McKee, Inc. Basin Management Objective Development Packet, Pentz. Technical Memorandum. Butte County: May 2004.¹⁴

The geologic formations in the Pentz area include the Modesto Formation, Tuscan Unit C, and Tuscan Unit 5. The Modesto Formation is present in the valleys near Highway 99 with a maximum thickness of 50 feet. The Tuscan Formation Unit C has a maximum thickness of 150 feet and is composed of gravels, sandstone, siltstone, and interbedded lahars. Tuscan Formation B is a water-bearing unit with most area wells drawing from this formation with its sandstone, siltstone, gravels, and interbedded lahars. Tuscan Formation B has a maximum thickness of approximately 600 feet.

Camp Dresser & McKee, Inc. Basin Management Objective Development Packet, Western Canal. Technical Memorandum. Butte County: May 2004.¹⁵

The geologic formations in the Western Canal area include the Basin Deposits, the Laguna Formation, Tuscan Unit C, and Tuscan Unit B. Basin deposits are fine-grained silt and clay and are exposed at the surface throughout the Western Canal area with a maximum thickness of 200 feet. The Laguna Formation is a water-bearing unit and is exposed near the Thermalito Afterbay. It has a maximum thickness of 450 feet and is composed of interbedded alluvial gravel, sand, and silt. The Tuscan Formation Unit C is not a water-bearing unit in the east, and has a maximum thickness of 200 feet in the

eastern portion of the area. In the western portion of the Western Canal area, the Tuscan Formation Unit C can be a water-bearing unit with a maximum thickness of 600 feet. It is composed of volcanic lahars with some interbedded volcanic conglomerate and sandstone, and reworked sediments. Tuscan Formation Unit B is a water-bearing unit in the Western Canal, and most irrigation wells in the Western Canal area are likely to be extracting water either from Tuscan Formation Unit B in the east or Tuscan Formation Unit C in the west.