How Groundwater is used in the Shasta Valley

Geologists have long known that groundwater in the Shasta Valley is complex. Due to the unique geology of Siskiyou County, there are very rough estimates of how much water runs into the aquifer from snow and rain on our mountains and valley. Additionally, while estimates can be made for domestic water users, estimates of water use, water loss, and groundwater recharge from agriculture is much harder to calculate. Most wells in the Shasta Valley are drilled for residential uses (homes). Irrigation, industrial and municipal account for the rest of the wells. However groundwater used for agricultural purposes in Siskiyou County is thought to be the greatest amount. Historically, groundwater has not been owned, monitored or managed by any state agency in California. With the passage of the Sustainable Groundwater Management Act in 2014, Groundwater Sustainability Agencies (GSA's) were formed to better evaluate groundwater inputs and uses within the basin. New studies to understand the specifics of groundwater uses in Shasta Valley will give local agencies and the public a better idea of the scope and extents of this vital natural resource.

What IS Groundwater?

Groundwater is defined by the California Department of Water Resources (CDWR) as "water that occurs beneath the land surface and fills the pore spaces of the alluvium, soil, or rock formation in which it is situated. It excludes soil moisture, which refers to water held by capillary action in the upper unsaturated zones of soil or rock. Groundwater classified as underflow of a surface water system, a "subterranean stream flowing through a known and definite channel," is subject to statutory permitting processes. However, most groundwater in California is presumed to be "percolating water" (i.e., water in underground basins and groundwater that has escaped from streams and is not subject to a permitting process)."

Groundwater Basin — An alluvial aquifer or a stacked series of alluvial aquifers with reasonably well-defined boundaries in a lateral direction and having a definable bottom.

Glossary of the California Water Plan Update 2013.

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Groundwater in the Shasta Valley

Groundwater Basics for the Shasta Valley

Stewardship through Collaboration

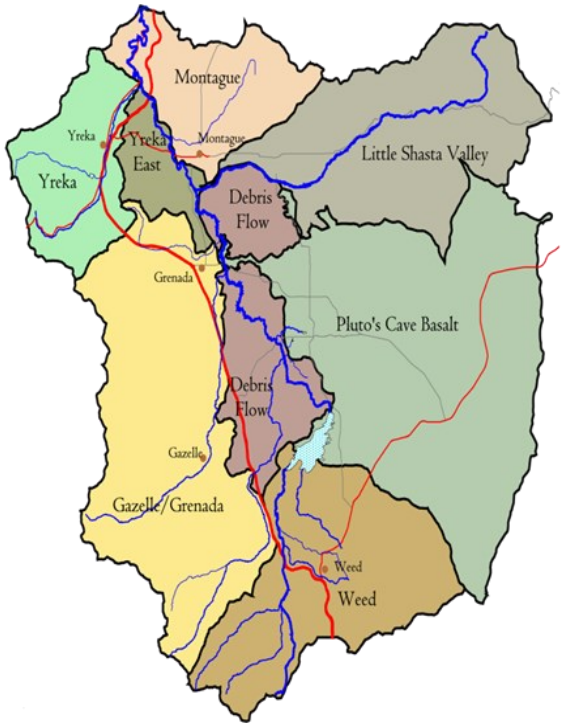
Geology of Shasta Valley, California

Shasta Valley, located in central Siskiyou County, is the result of numerous and varied geologic processes that formed the valley we see today. The valley is bounded on the west by the complexly faulted and folded rocks of the Eastern Klamath terrane and on the east by volcanic rocks of the Cascade Range. The Cascade stratovolcano, Mt. Shasta, resides at the southern extent of Shasta Valley. Around 380-300 thousand years ago, an extremely large section of ancestral Mt. Shasta failed, and a gigantic debris avalanche tumbled down the north side of the mountain depositing fine sediments as well as large blocks of andesite that make up many of the mounds that cover the Shasta Valley floor. The debris avalanche deposits overlie marine sediments, such as the Hornbrook Formation, and older alluvium. The debris avalanche deposits are in turn overlain by recent volcanics, such as the Pluto Cave basalt, in much of the southeast of the valley.

Shasta Valley is drained primarily from south to north by the Shasta River and its tributaries. Numerous springs are found along the rim of the valley and at the margins of the Pluto Cave basalt in the eastern third of the valley.

Shasta Valley Watershed

The map shows the distinctly different groundwater sub-areas. They have different geologic and hydrologic flow characteristics.



Groundwater Rights

Use of groundwater is a property right with a few exceptions.

Responsibility to assess the sustainability of groundwater rests with the County Flood Control and Water Conservation District through the newly formed Shasta Valley Groundwater Sustainability Agency (GSA).

Overview of Shasta Valley Groundwater Basin and Hydrologic Sub-Areas

The volcanic rocks of the Shasta Valley form its principal aquifers, especially the Pluto Cave basalt and older volcanic rocks of the Cascade Range. The northern flanks of Mt. Shasta account for approximately 20% of the groundwater that enters Shasta Valley. Though volcanic rocks comprise much of the Shasta Valley's geology, their distribution is not uniform throughout the valley, and the interconnectedness of aquifers is not well understood. The CDWR has identified at least eight hydrologic sub-areas within the Shasta Valley.

The sub-area delineations are based on geology, hydrogeology, hydrology, groundwater chemistry, and subwatershed boundaries. It should be noted that the boundaries and number of hydrologic sub-areas is expected to change with continued comprehensive data collection and analysis.

Learn more at our website:
http://svrcd.org/wordpress/

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