

# **GEOCHEMISTRY AND CHEMICAL DYNAMICS OF THE TRUCKEE RIVER BASIN**

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The Truckee River is a perennial water system with headwaters originating in the eastern Sierra Nevada. The basin is hydrologically closed and the river terminates at Pyramid Lake, Nevada, which is northeast of the Reno-Sparks area. The objective of this study is to understand the chemical dynamics of the Truckee River system over time and space, along with a quantification of a hydrogen isotope budget as it pertains to evaporation rates along the river and the mixing dynamics of the river from different sources. Data were collected at ten different stations along the river from Farad, CA to Pyramid Lake, NV. Currently, the data is being coupled with historic stream flow, water chemistry, and isotopic data to analyze long-term changes in the chemical and hydrologic regime of the river. The historic data are also being analyzed for trends in chemical and isotopic fluctuation due to seasonal variations on a yearly basis, as well as for changes in water quality due to urban-growth in surrounding areas.

Preliminary results indicate that conductivity, alkalinity, and pH show a general increase in a downstream direction, while  $\delta D$  shows a small shift to isotopically lighter values in a downstream direction. Specific conductivity increases abruptly between Reno and Lockwood, which may be a function of discharge into the Truckee from the Steamboat Ditch, Pioneer Ditch, Reno Sewage Disposal Facilities, and the North Truckee Drain. There is also a sharp increase in conductivity between the Wadsworth and Nixon stations, which may be attributed to several ephemeral streams, fish hatcheries, or groundwater influx between the two areas.  $\delta D$  ranged from  $-73$  to  $-79$  ‰ VSMOW from Farad to Nixon. This progressively lighter trend in  $\delta D$  from east to west may be attributed to influx of isotopically lighter groundwater derived from more depleted meteoric water precipitated earlier in the winter.

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