

USGS Salinity Study Brief

Recent and historical studies related to water availability in Spanish Valley, UT have encountered the shallow presence of Paradox Formation brine in the northern part of the valley within in the Matheson Wetlands Preserve. Early snowpack and stream runoff projections for 2022 indicate that the long-term drought will likely persist into 2023. The volume of brine that discharges to the Colorado River is not well quantified and is difficult to measure due to the large size of the river. Near record low flows in the Colorado River during baseflow conditions are likely in the fall and winter of 2022 and provide an opportunity to quantify the loading potential from the Spanish Valley brines at low river stage that were encountered in the river during the early spring of 2022. The relation between environmental impact and the associated stream chemistry will be investigated through a synoptic or “snapshot” sampling effort, where surface water is collected from several sites along a stream reach or across a watershed in a short amount of time. Special emphasis will be given to sample the river during lowest anticipated flows to remove uncertainty.

Shallow monitoring wells have been drilled in multiple locations throughout the Matheson Wetlands Preserve. Most of these wells were drilled as part of freshwater availability studies and focus on areas around Mill Creek. The density of wells that are drilled to investigate the salt water/ freshwater interface at depth is more limited. A current study lead by the Utah Geological Survey is monitoring locations where the interface is present. More wells are needed to gain a better understanding of the relationship between the brine and the overlying freshwater in the valley-fill aquifer. New sites for wells will be generated by data gap analysis of the current wells under study. A small-scale pumping test will be conducted at one of the proposed drill sites with multiple monitoring locations to investigate the potential movement of the deep brine as a result of removal of overlying freshwater in the aquifer.

Colorado River Salinity Control Program	\$67,500
USGS (match for cooperative funding at 66/33)	\$30,000
Cooperative Funding match	\$45,000
Total study funding	\$142,500