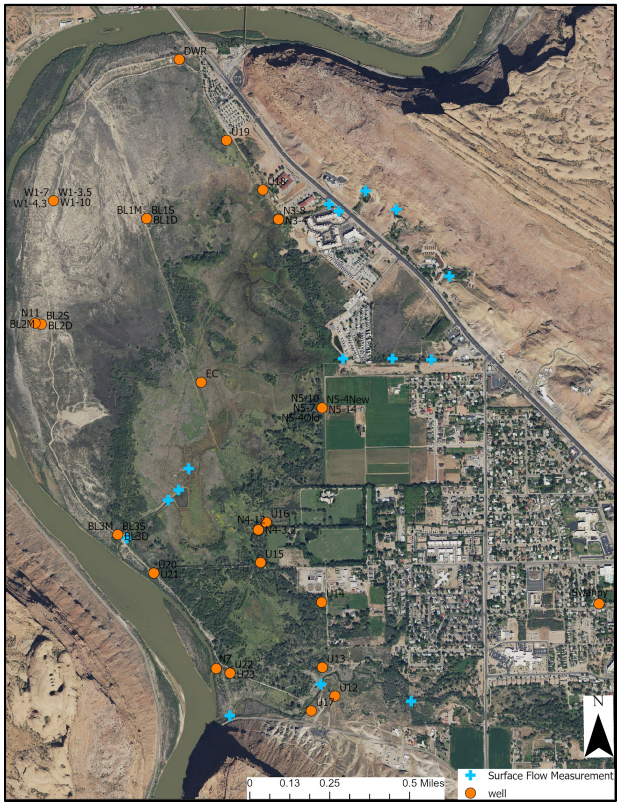
MATHESON WETLANDS PRESERVE WATER MONITORING, WATER BUDGET, WETLAND MAPPING, AND WETLAND CHANGE ANALYSIS

Utah Geological Survey Groundwater and Wetlands Program

The Scott and Norma Matheson Wetlands Preserve (MWP) is a rare wetland ecosystem adjoining the Colorado River riparian corridor. This unique, ecologically important wetlands in the arid portion of the Colorado Plateau attracts and supports many avian, animal, and plant species, as well as recreational and educational opportunities.

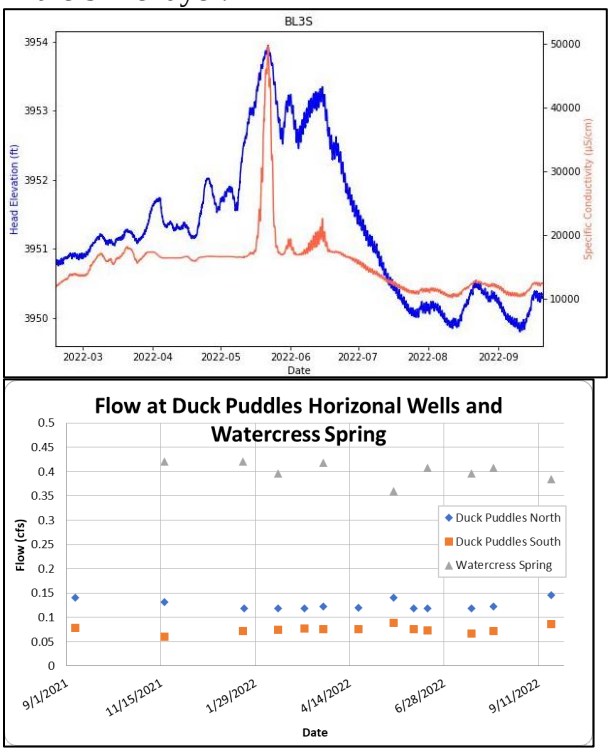
Brine water exists beneath freshwater in the valley fill aquifer of the MWP. The specific conductivity of the brine exceeds 100,000 µS/cm, double that of typical seawater. Changes to the hydrologic system (drought, development) may result in brine discharging to the Colorado River and degradation of the wetlands.



Sampling and Monitoring Locations in the MWP

The Utah Geological Survey has undertaken a study to develop a water budget, constrain the subsurface position of the brine, and map the vegetation of the MWP. We are measuring surface water flow at springs east of Hwy 191 and locations throughout the MWP. We installed eighteen pressure transducers in monitoring wells to track groundwater elevation, eight of which are also measuring salinity. We are conducting geophysical and water chemistry analyses to constrain the location and origin of the brine layer. Field work will continue through June 2023 and a draft report for partners' review will be available in early 2024.

Our results will help assess potential impacts of ongoing groundwater development, and provide recommendations for long-term monitoring of sites in and adjacent to the MWP, including monitoring the discharge of Glen Canyon Group springs and fluctuations in the brine layer.



Example plots of groundwater elevation and salinity in a well (above) and spring flow from the Glen Canyon Group aquifer (below)

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