

MATHESON WETLANDS PRESERVE BRINE DELINEATION AND MONITORING, WATER BUDGET, SPRING AND SURFACE FLOW MONITORING, AND VEGETATION HEALTH

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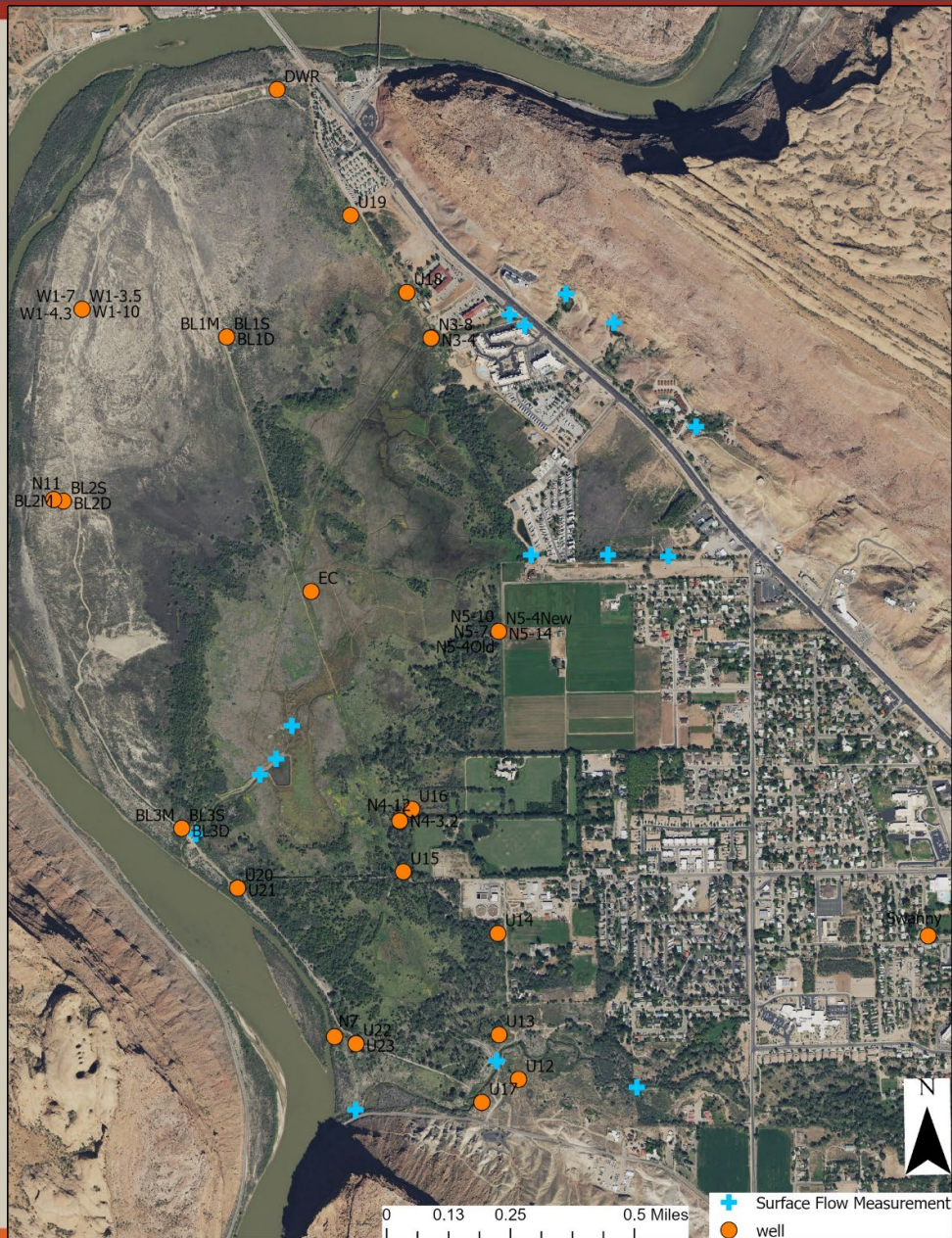
Supported by: The Utah Geological Survey, The Utah Division of Wildlife Resources, The Utah Division of Water Rights,
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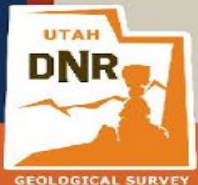
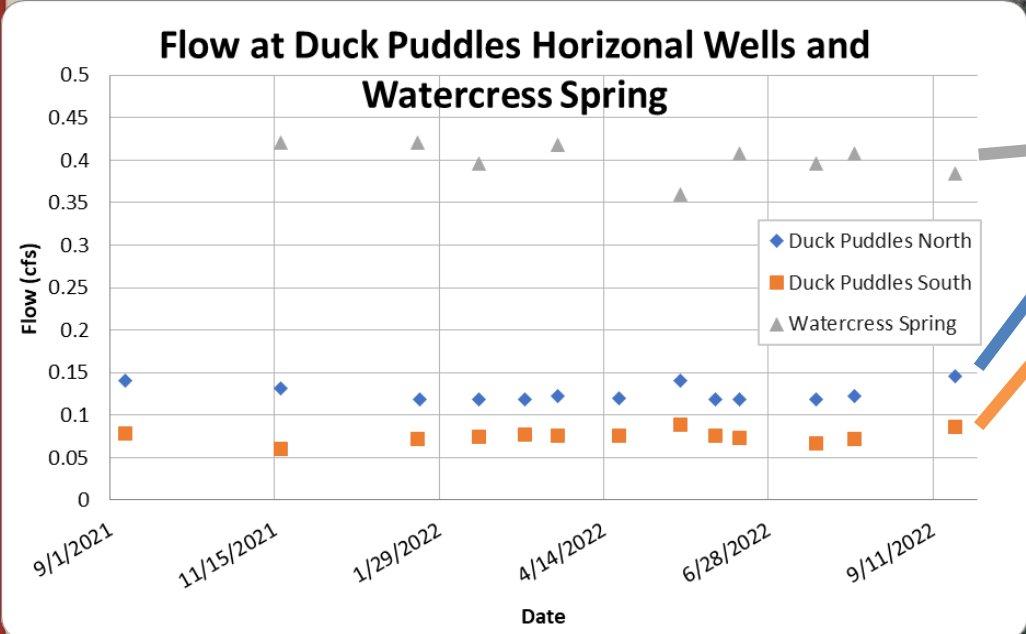
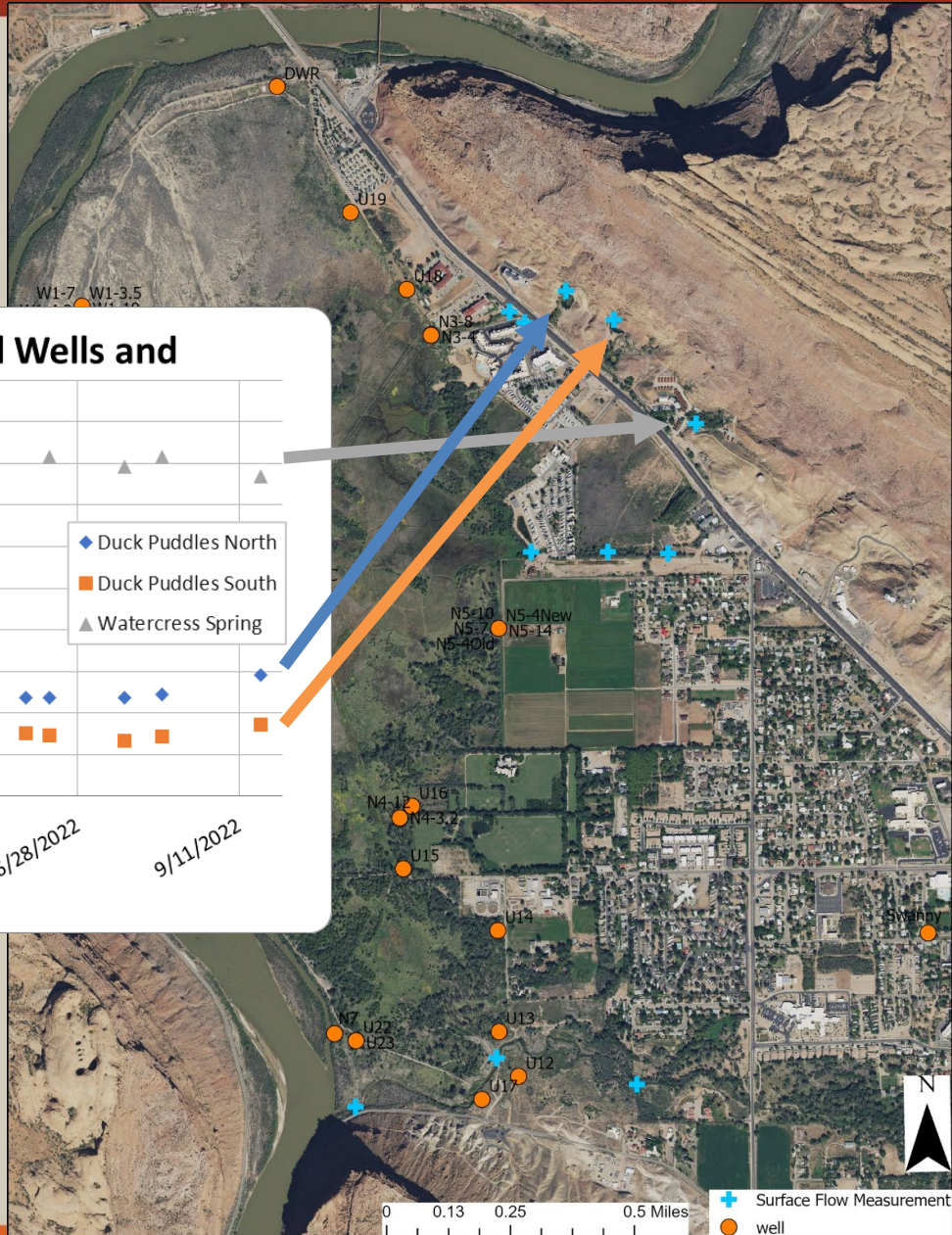


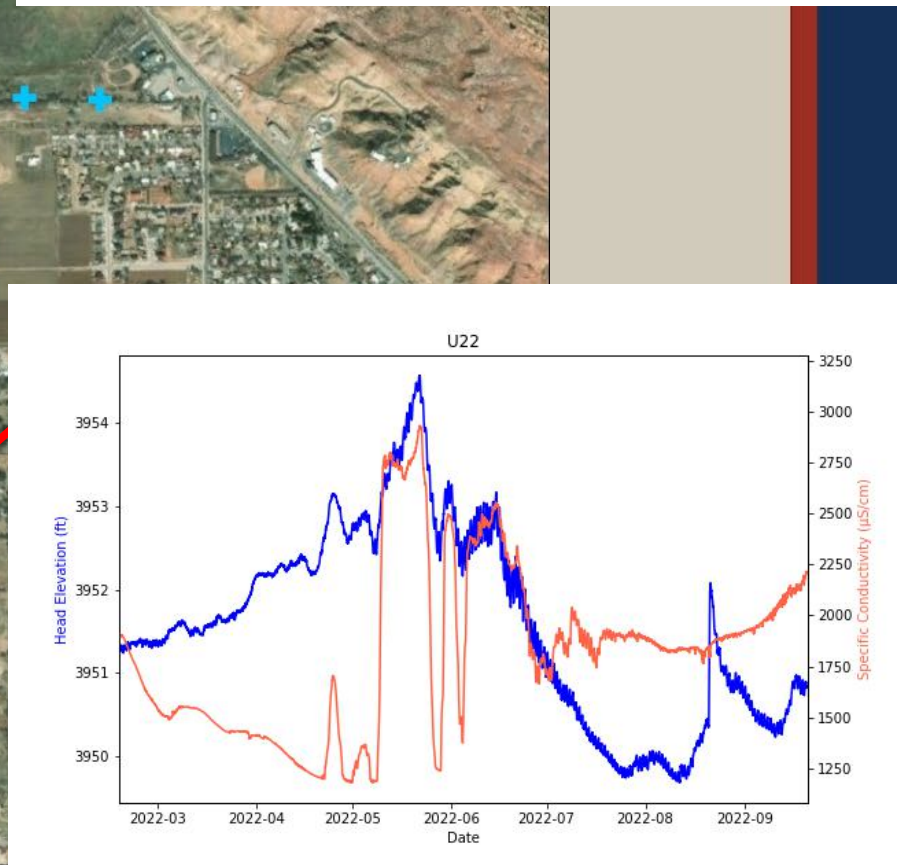
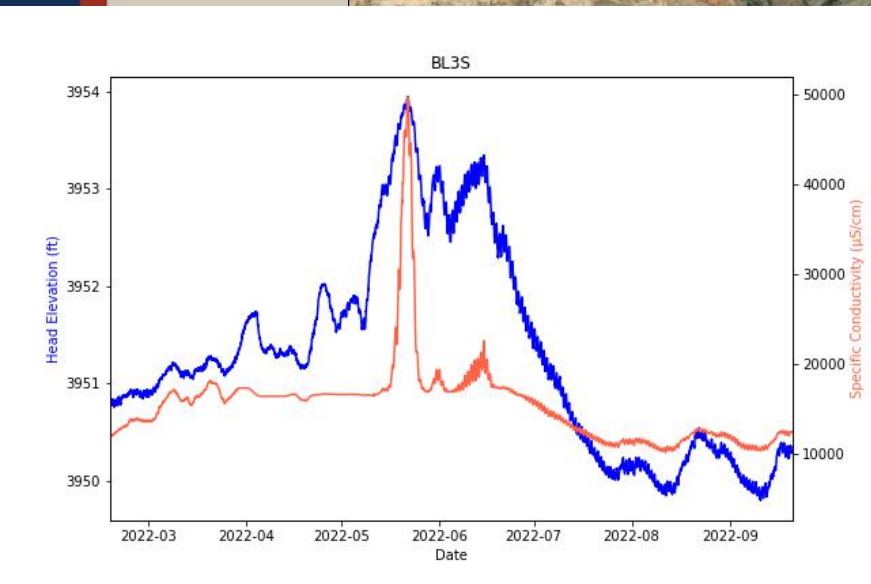
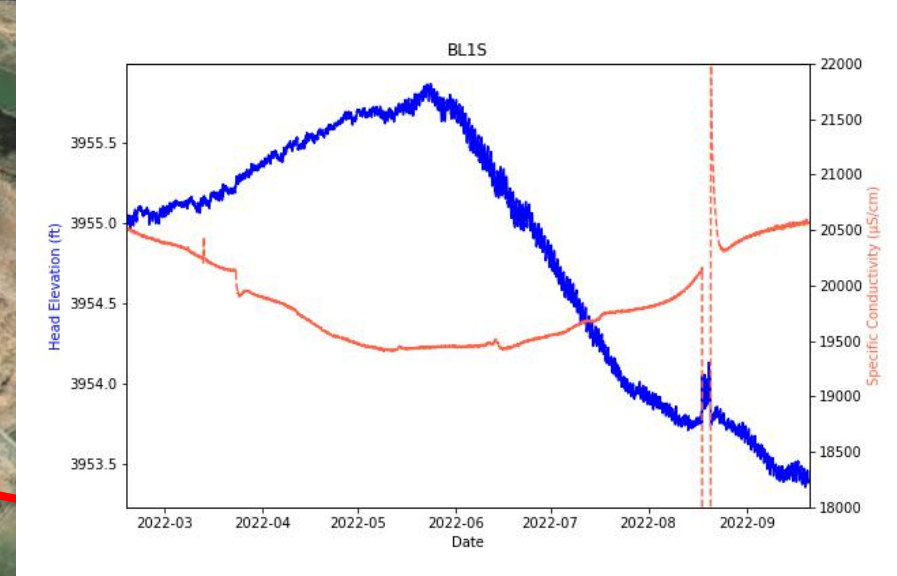
OBJECTIVES

- **Evaluate and Monitor Fresh Water-Brine Boundary – FY22-23**
 - Map potentiometric surface – has it changed since previous studies
 - Use TEM resistivity surveys paired with electromagnetic induction logging (EM) of wells
 - Characterize seasonal and multi-year fluctuations using continuous monitoring of water levels/conductivity, groundwater chemistry, and TEM resistivity surveys.
- **Refine Water Budget of Preserve (Surface Water & Groundwater Inflows & Outflows) – FY22-23**
 - Measure discharge from Watercress (a.k.a. Moab Ranch) & Duck Puddle (a.k.a. Water Park) Springs.
 - Quantify surface flow into and out of MWP pond system & tailwater from agricultural canals and fields.
 - Estimate evapotranspiration using an eddy-covariance flux (ECF) station and remotely sensed data.
 - Evaluate groundwater flow paths using water level measurements and chemical sampling.
- **Evaluate Relationship between Hydrology and Wetland Health - FY22-23**
 - Characterize and map vegetation, including distribution and associated water regimes.
 - Evaluate use of remotely sensed data to monitor wetland health over time and space.
- **Final analysis and results presentation, including recommendations for future monitoring - FY24**

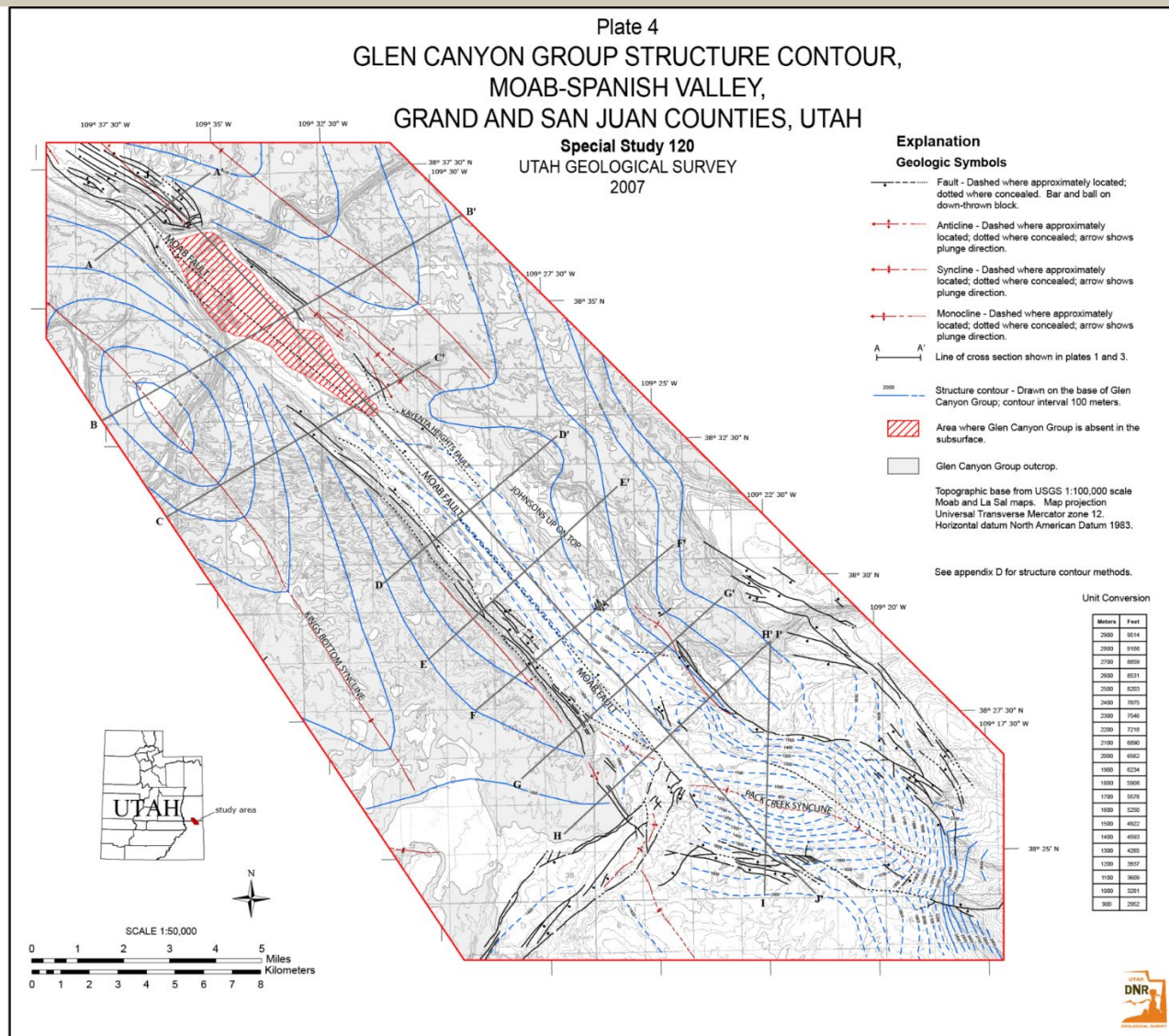






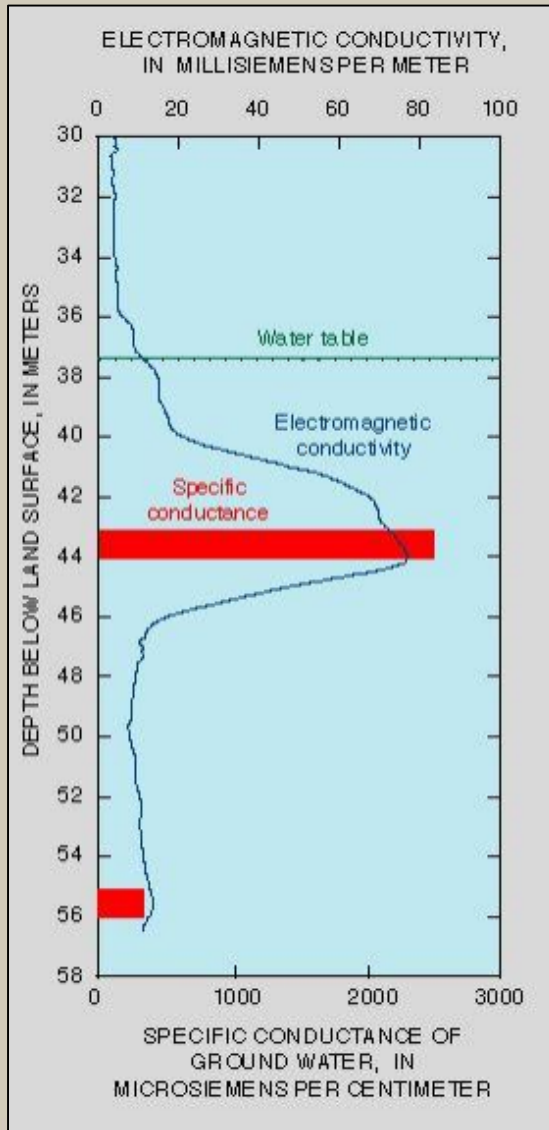


Brine Layer



ELECTROMAGNETIC-INDUCTION WELL LOGGING

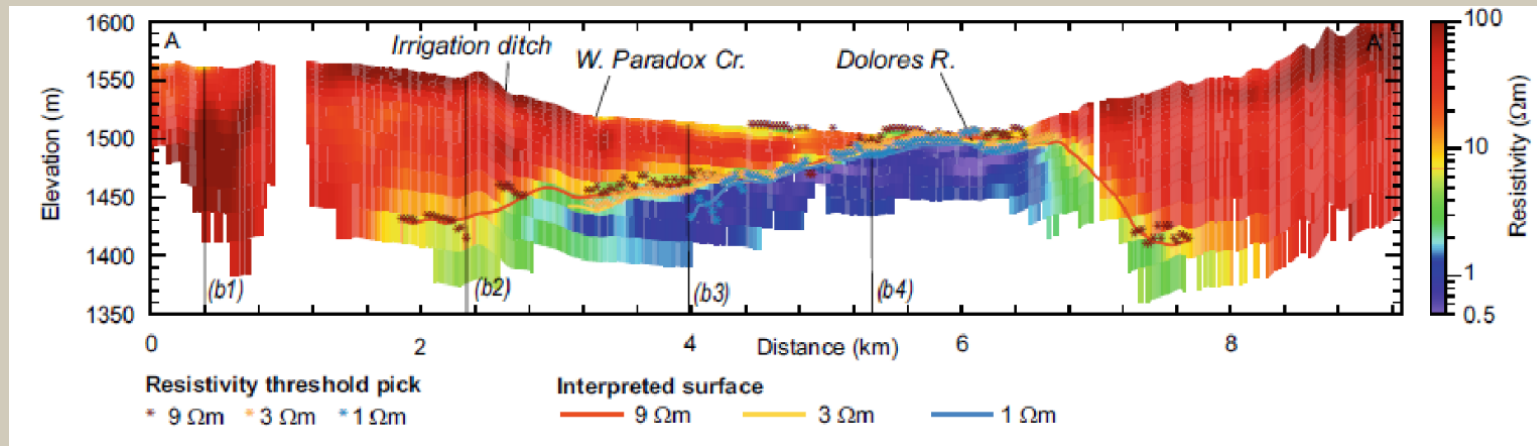
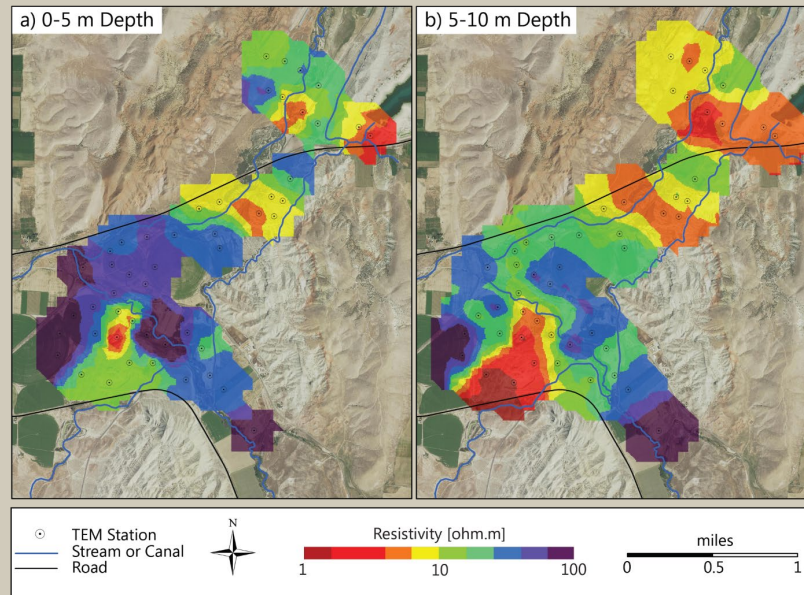
- delineate the brine-freshwater boundary in existing wells
- calibrate TEM



Williams and others, 1993



TRANSIENT ELECTROMAGNETIC SURVEYS



Ball and others, 2020

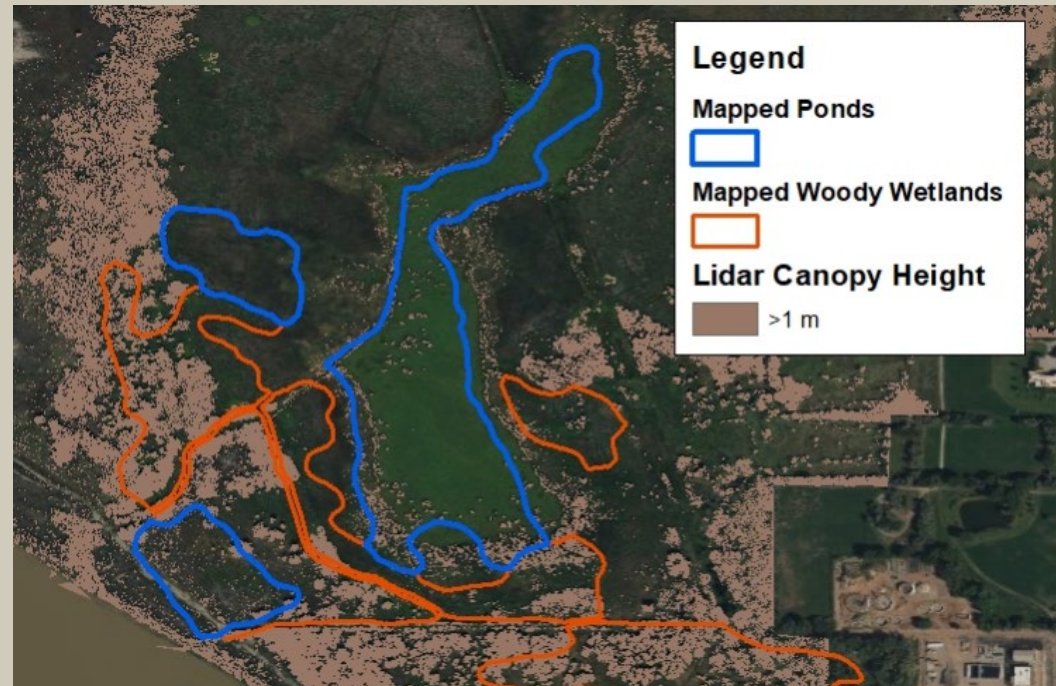
VEGETATION MAPPING

PURPOSE

- Determine baseline conditions to evaluate against future change.
- Establish relationships between hydrologic data (potentiometric surface, flow paths, etc.) and vegetation.
- Provide vegetation community data for ET estimates.

METHODS

- Similar to National Wetlands Inventory mapping, except will include upland areas and more vegetation detail.



Proposed Funding From Additional Partners

The proposed cost sharing for FY 23 is in addition to already-established cost sharing among UGS and our partners.

Proposed FY 23 (7/1/22 - 6/30/23)

Personnel	Hours	Cost	Task
K. Ladig	360	\$16,488	Data Management, Analysis, and Reporting
T. Schlossnagle. K. Smith	265	\$12,023	Geochemical & Geophysical Data Collection & Interpretation
Item		Cost	Task
Geochemical Samples		\$4,375	Major-Ion Solute Concentrations, Trace Elements
Total		\$32,886	
General & Administrative (34.47%)		\$11,336	
Total Costs		\$44,222	
UGS Cost Share (50%)		\$22,111	
Grand County		\$22,111	

Total Budget FY23 = \$139,396

UGS = \$76,786

All Partners = \$62,611

Proposed FY 24 (7/1/23 - 6/30/24)

Contributors	Amount	Percent
UDWR	\$15,000	17.05%
CRAU	\$14,000	15.91%
TNC	\$3,000	3.41%
Grand County	\$12,000	13.64%
UGS	\$44,000	50.00%
Total Budget	\$88,000	



Questions?

