

Groundwater Assessment of Cache Valley



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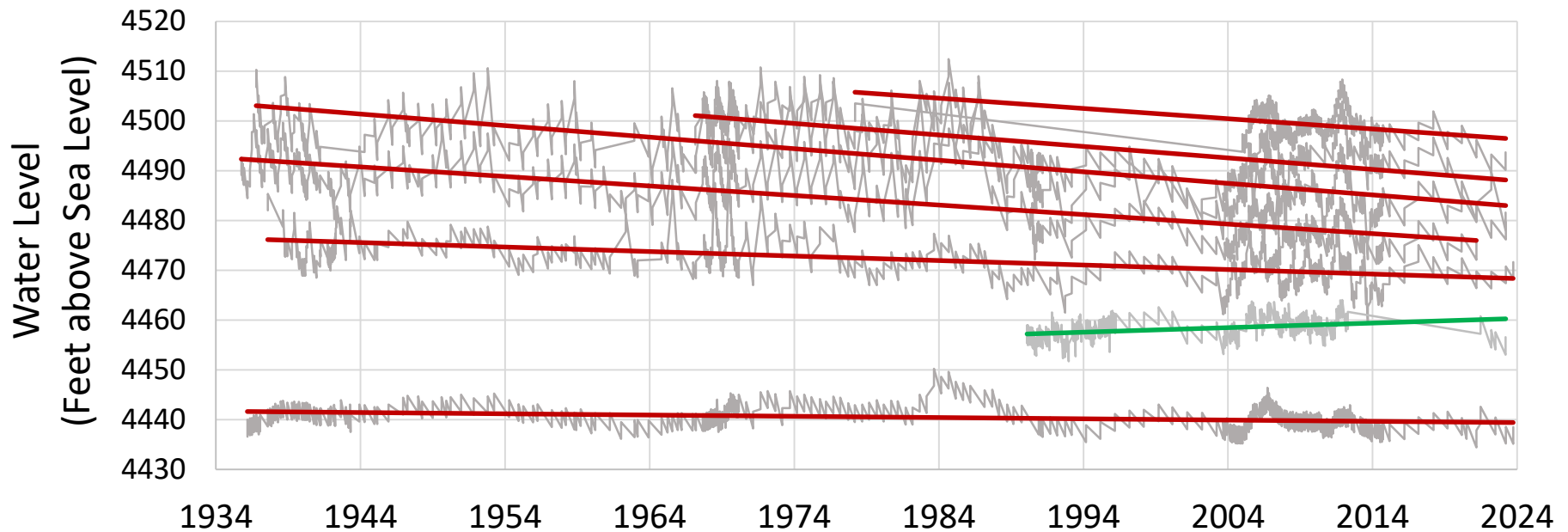
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Supervisory Hydrologist



Broader Motivation – Declining Groundwater Levels

Most USGS monitored groundwater wells in Cache Valley show declining water levels.

Groundwater Levels of 7 USGS Monitoring Wells in Cache Valley

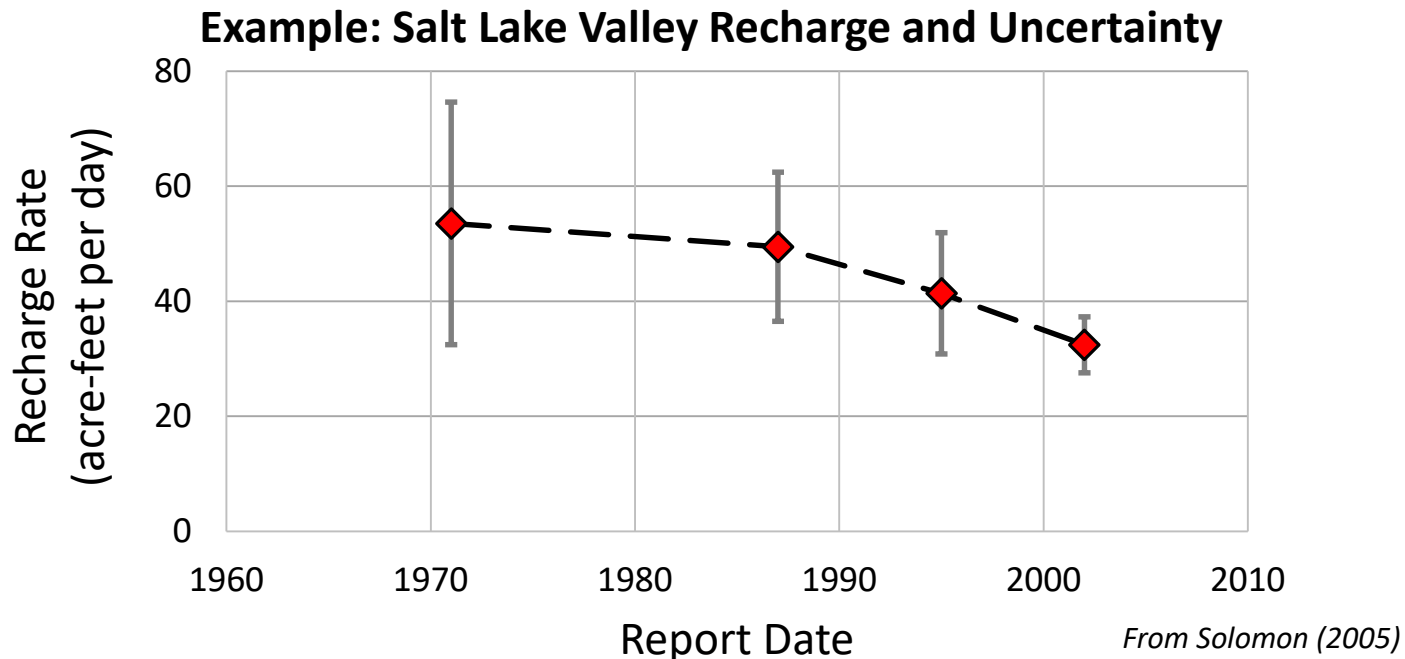


Background

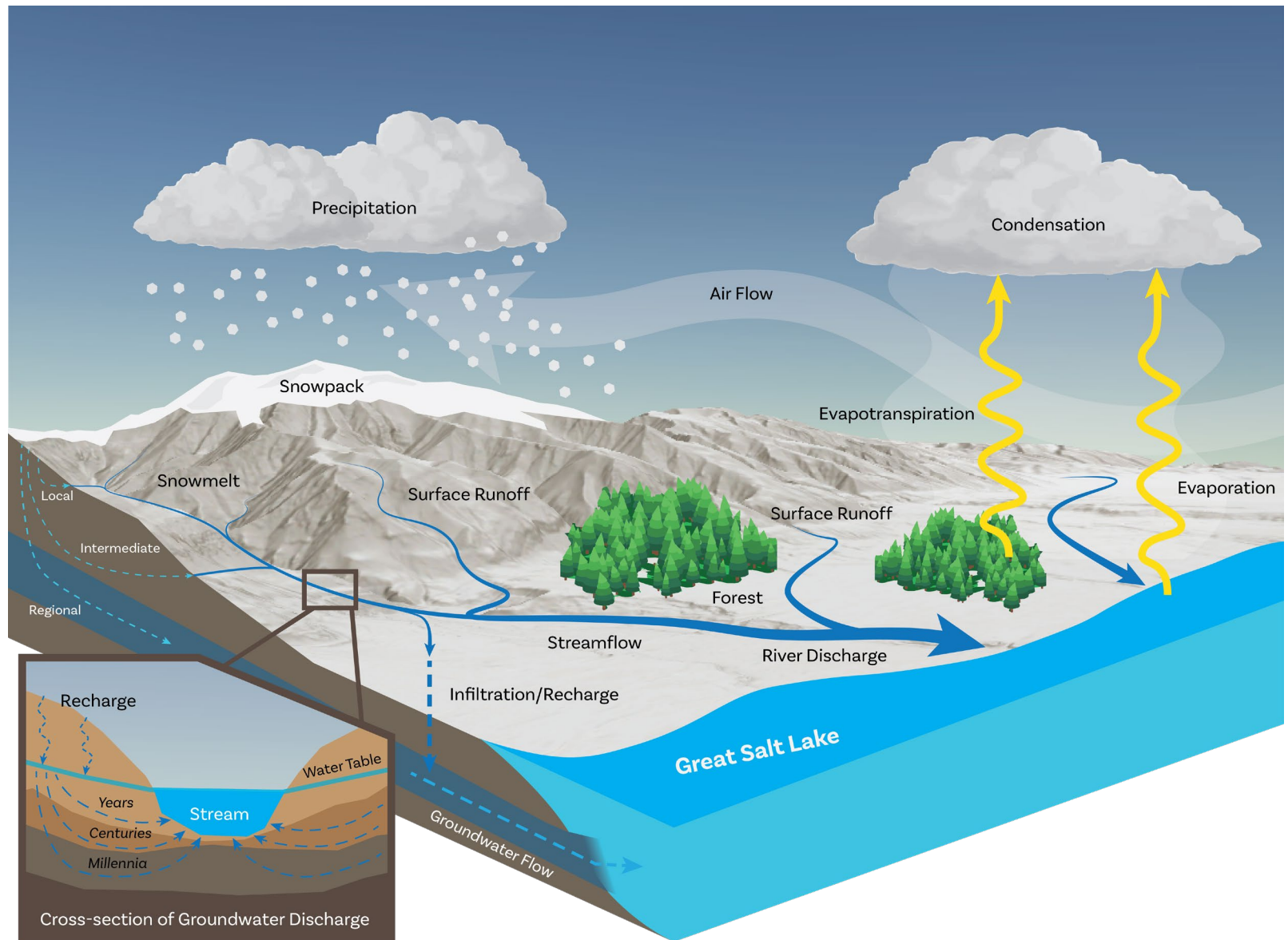
The most recent groundwater budget for **Cache Valley** was compiled in 1990 (Kariya and others, 1994) and the estimates of groundwater recharge contain large uncertainties due to methods applied.

There is a clear need for updated estimates that considers:

- a. Modern techniques including environmental tracers and advanced modeling
- b. Updated precipitation rates, land use, and water use
- c. Evaluating the connection between the mountain and valley aquifers



Groundwater Connectivity



Broader Motivation

Cache Valley is **highly dependent on groundwater** from springs and the valley aquifer

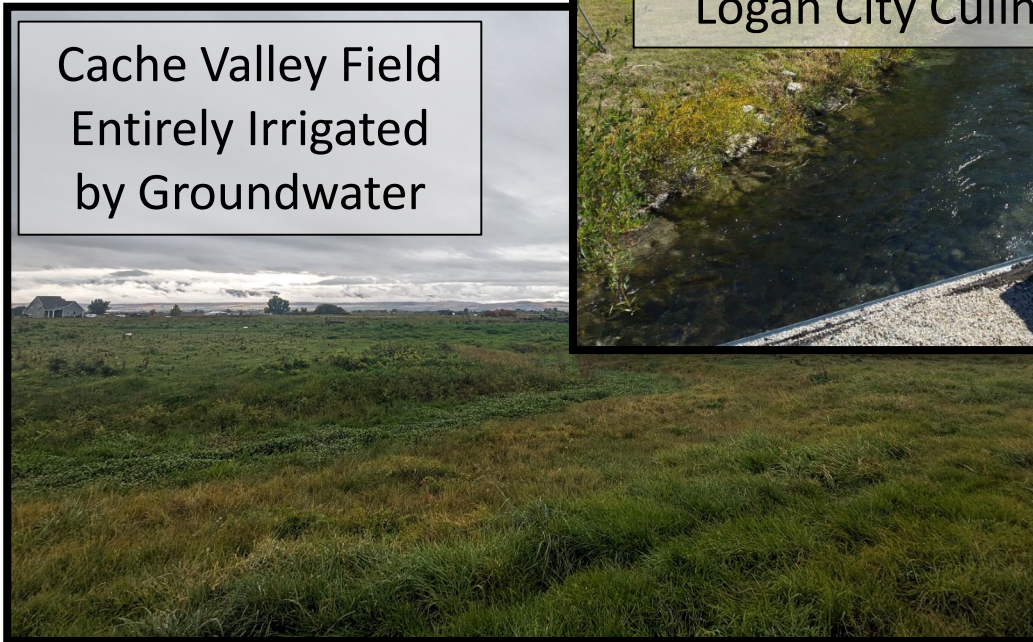
Ricks Springs - Logan Canyon



Dewitt Springs
Logan City Culinary Water



Cache Valley Field
Entirely Irrigated
by Groundwater



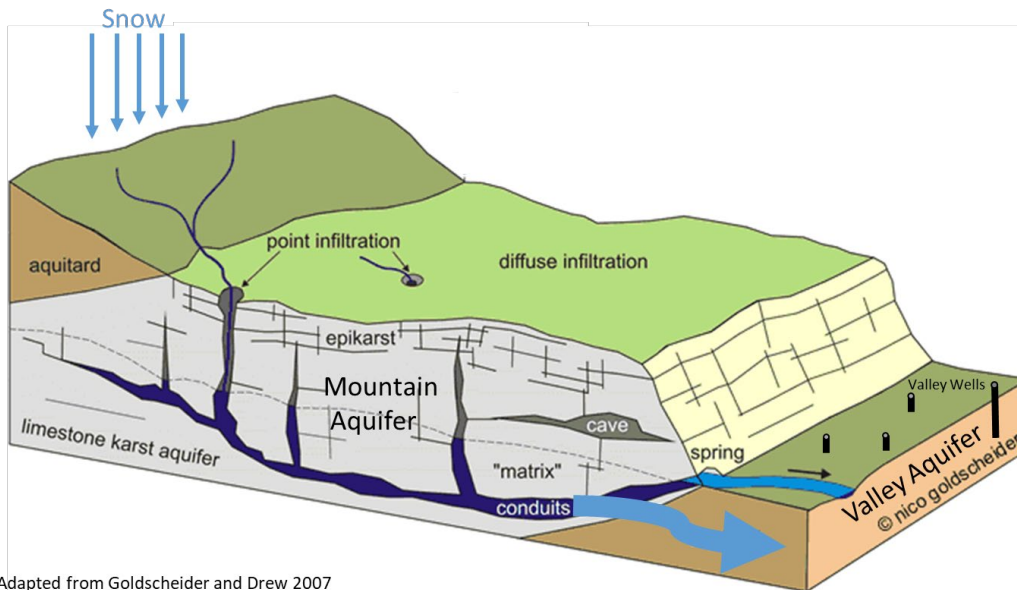
Groundwater Well with
Monitoring Sensor



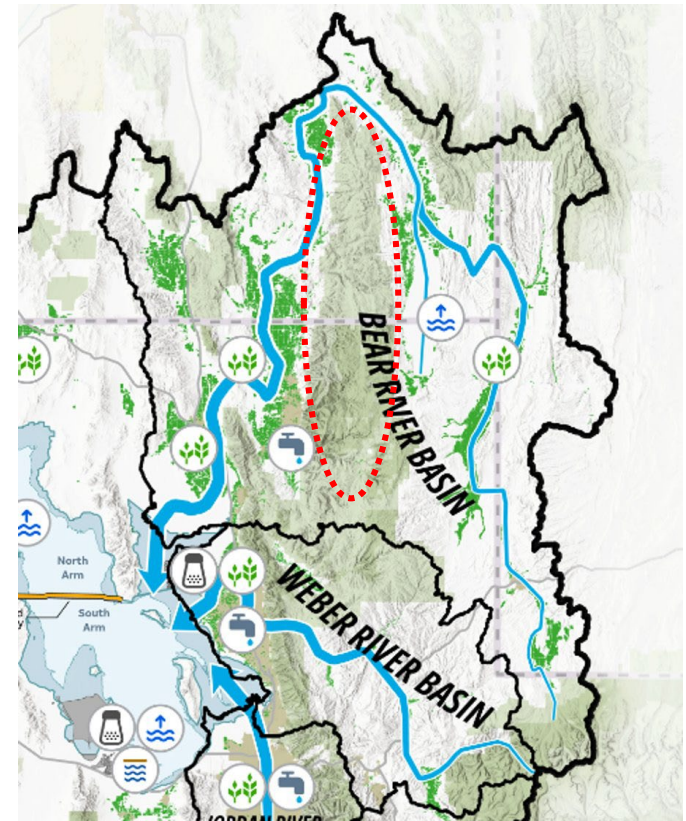
Broader Motivation

The karst geology of the **Bear River Range**:

- Results in relatively high subsurface flow via conduits, fractures, caves fed primarily by snowmelt
- Makes connections between mountain and valley aquifers more difficult to quantify
- Is highly susceptible to changes in snow patterns and climate



Adapted from Goldscheider and Drew 2007



Source: Great Salt Lake Basin: Connections, challenges, and solutions, Utah Division of Water Resources

Partners



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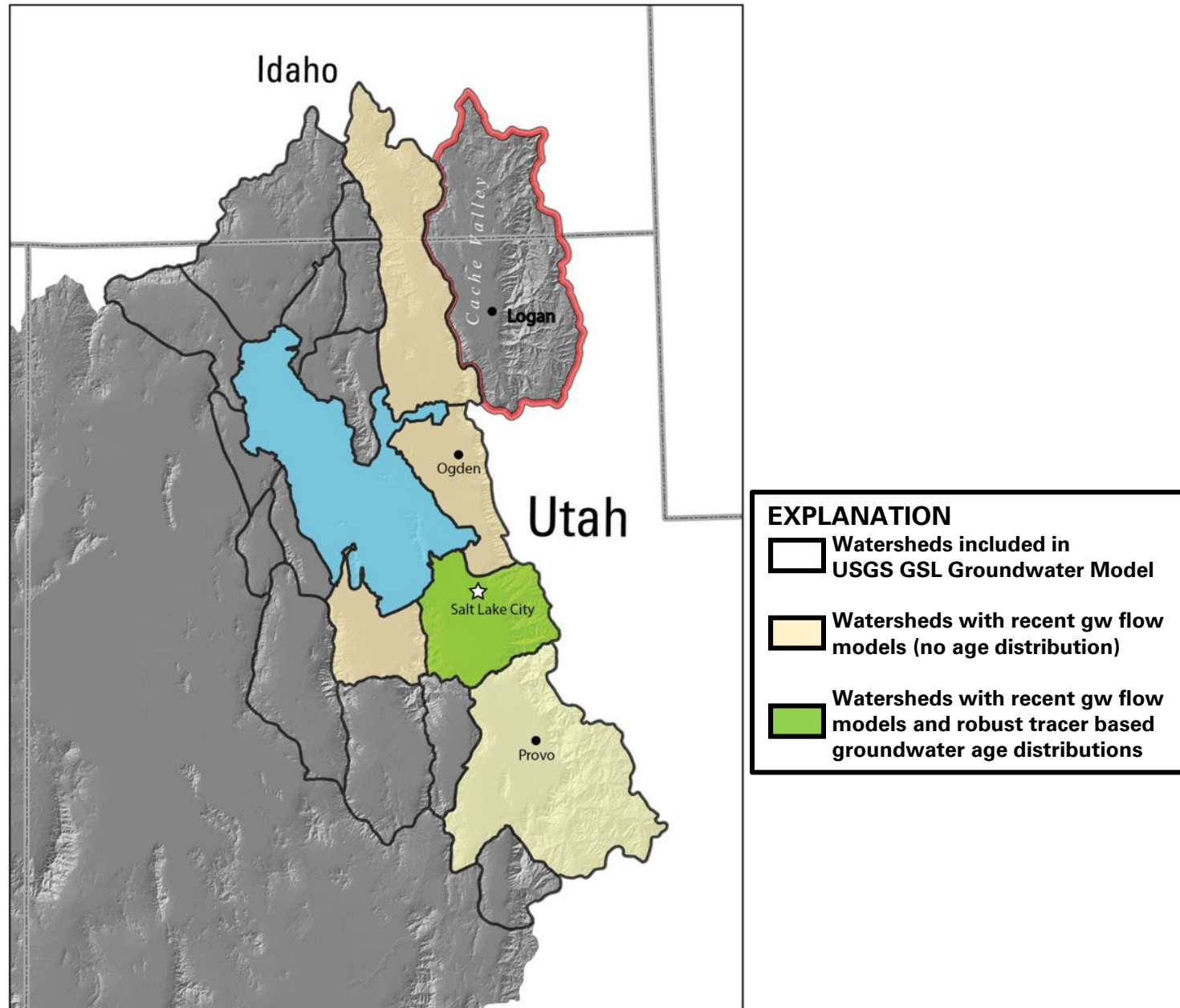
Professor

Geology and

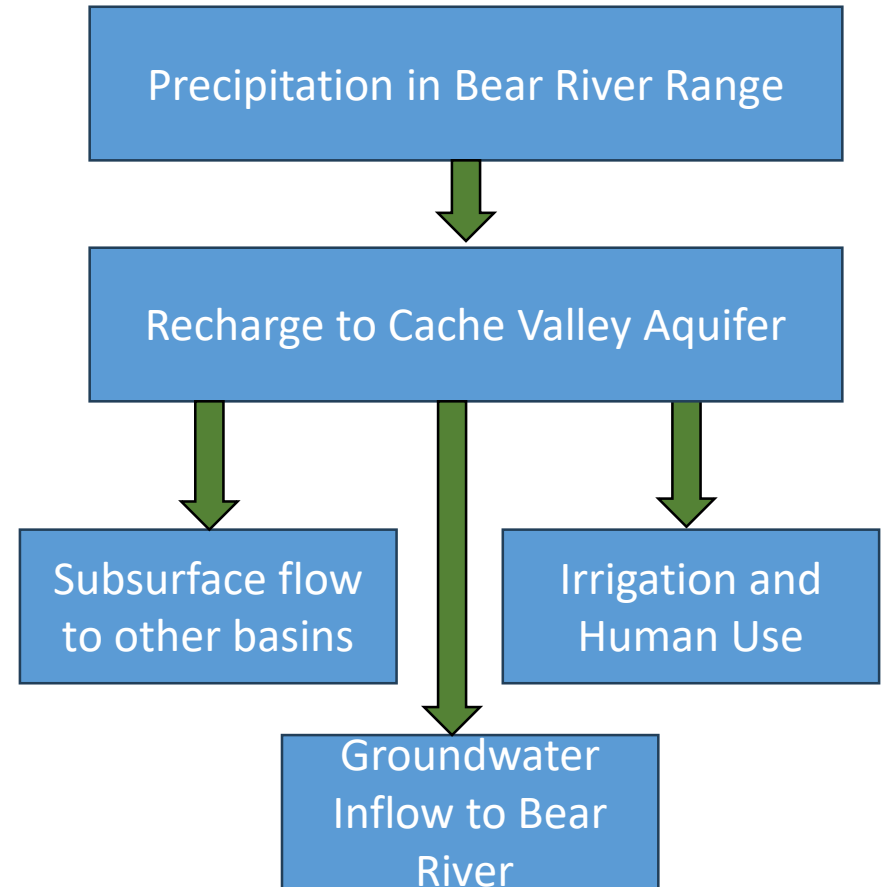
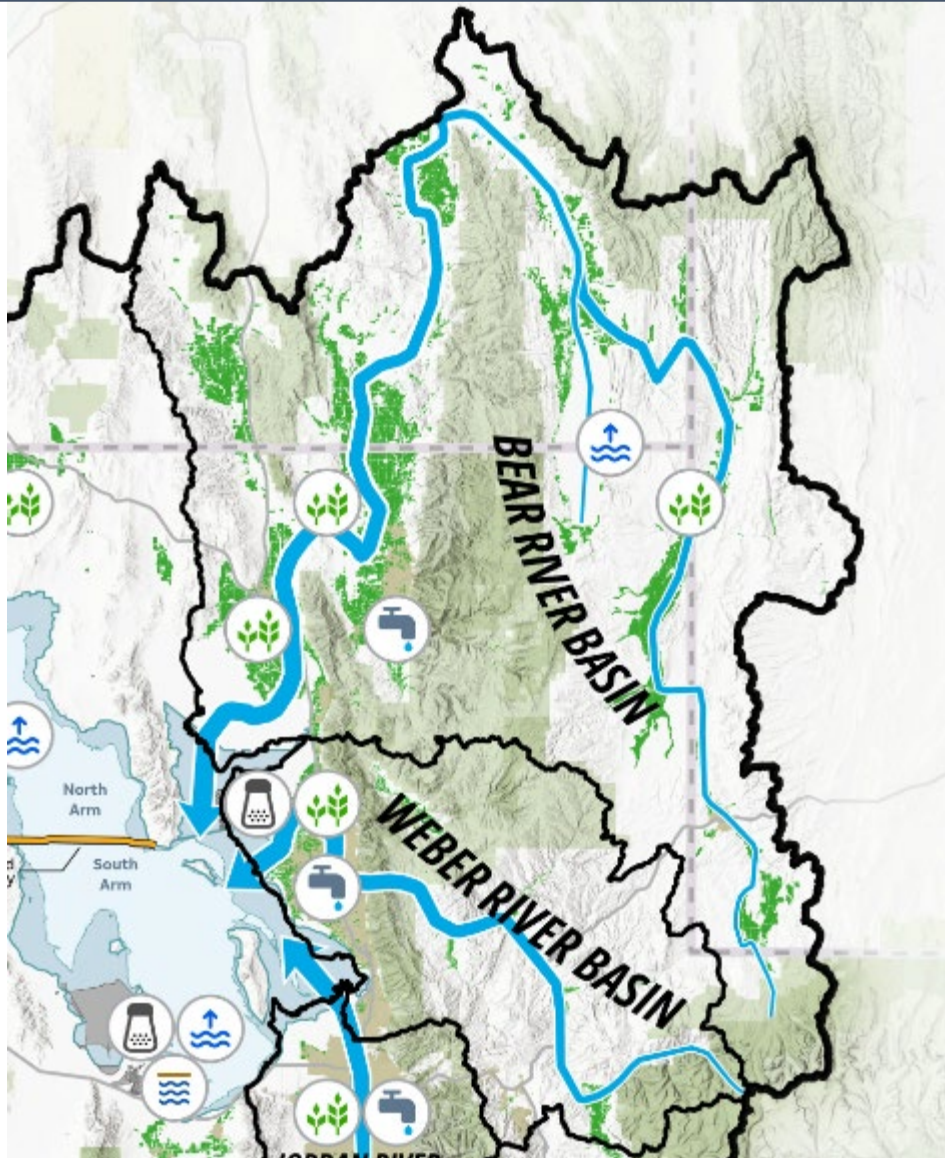
Geophysics



Other GSL Groundwater Modeling Efforts



Why does understanding Cache Valley groundwater matter to the greater Great Salt Lake basin?



Measurements and Modeling

It is critical to accurately estimate the **connection and recharge quantities** between complicated karst mountain aquifers and valley aquifers.

If we know the amount of water that goes into the Cache Valley aquifers, **more informed management decisions** can be made.



Steep Hollow/Crack Spring

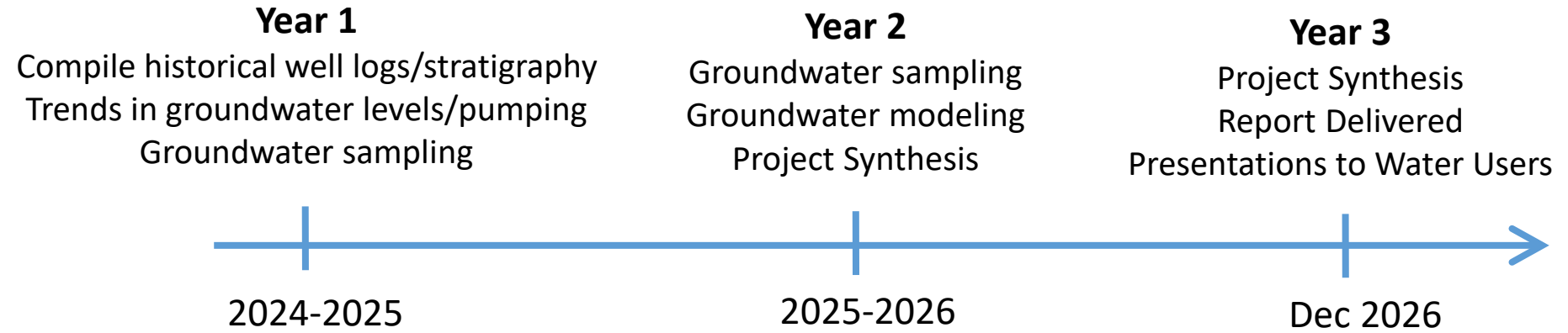


Sink Hollow



Wood Camp Spring

Timeline/Funding



RFA Funding Request: \$567,400

Matching Funds from Partners: \$159,300
(USGS, USU, U of U, Cache County, Cache Water District)

Total Cost: \$726,700



Utah State
University

