



Golden Valley Aquifer Recharge Assessment

September 13, 2022



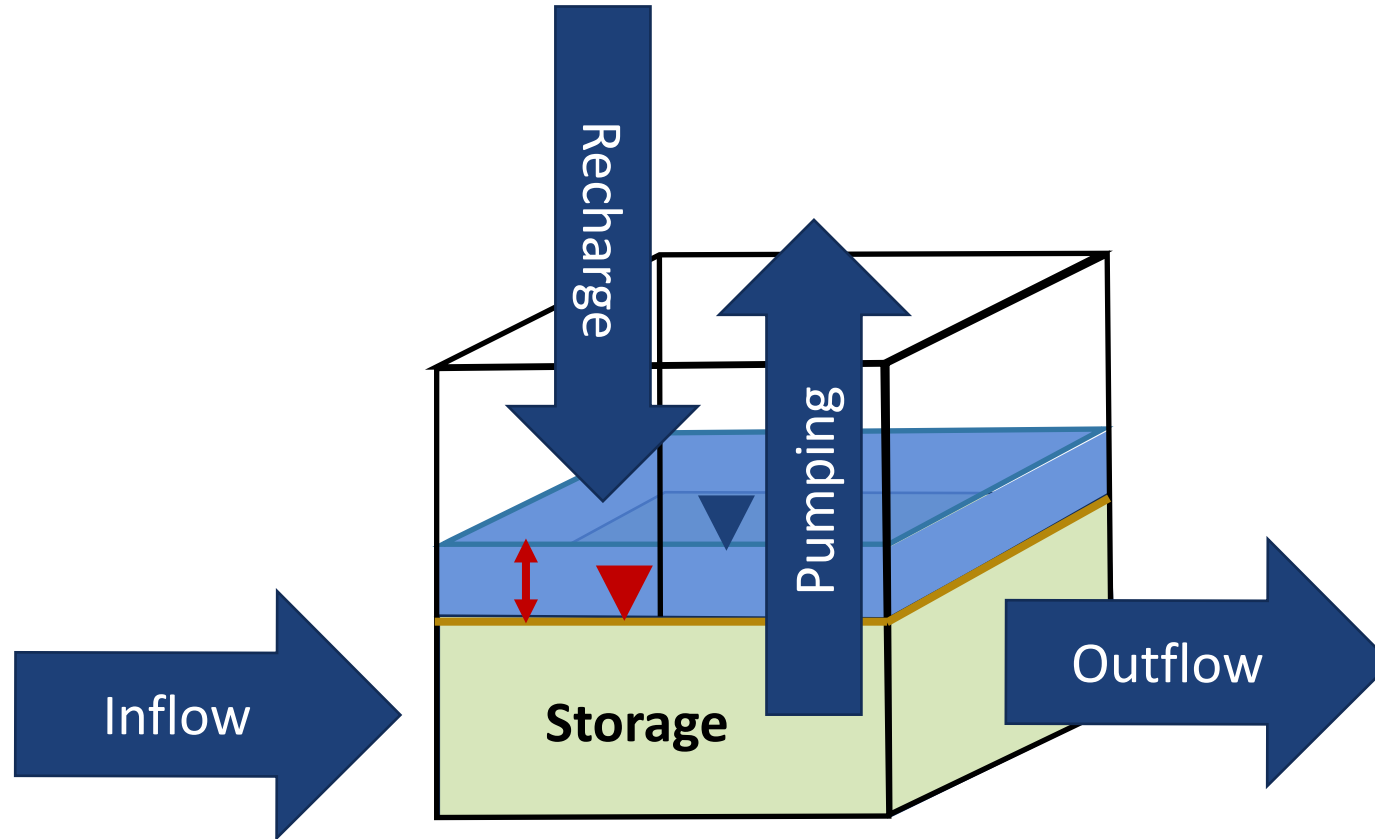
Purpose

- Develop an understanding of hydrogeologic conditions and assess changes in groundwater elevations throughout the basin and within localized areas
- Assess when, under what conditions, and at what locations restarting the aquifer recharge program would be beneficial

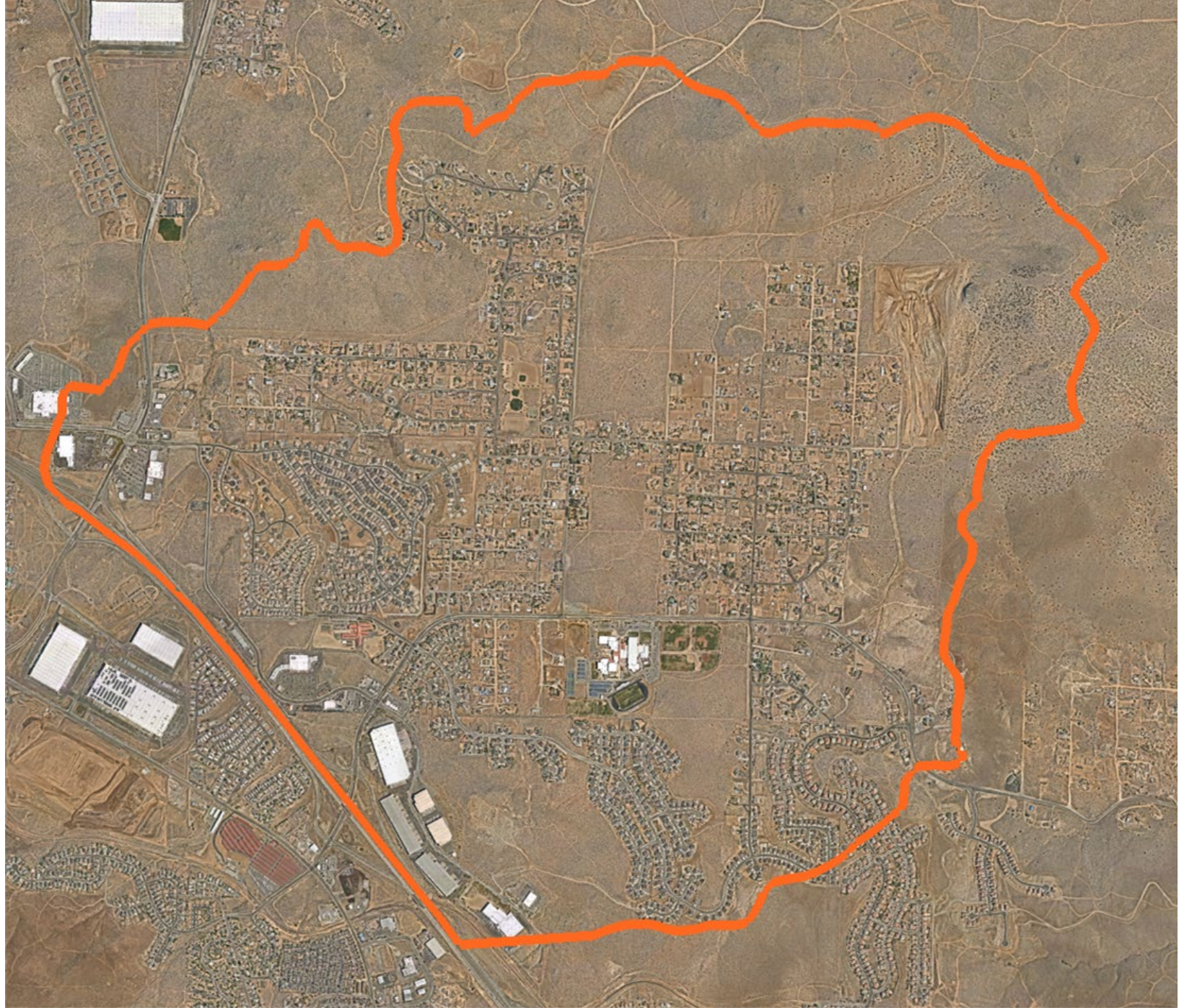
Findings

- Since the 1990s, more water has entered the system than has left, resulting in a net increase to groundwater storage
 - Changes in regional municipal pumping and long-term climatic conditions are major drivers
 - Water levels may take 1 – 2 decades to decline
- Water moves slowly through system; i.e., long travel times across the basin
 - 40 years in unconsolidated sediments
 - > 500 years in bedrock
- Specific areas experiencing water level rise or decline appear to be controlled by natural conditions and not recent developments or injection
- The groundwater model will be used to predict when and at what locations future injection may be beneficial

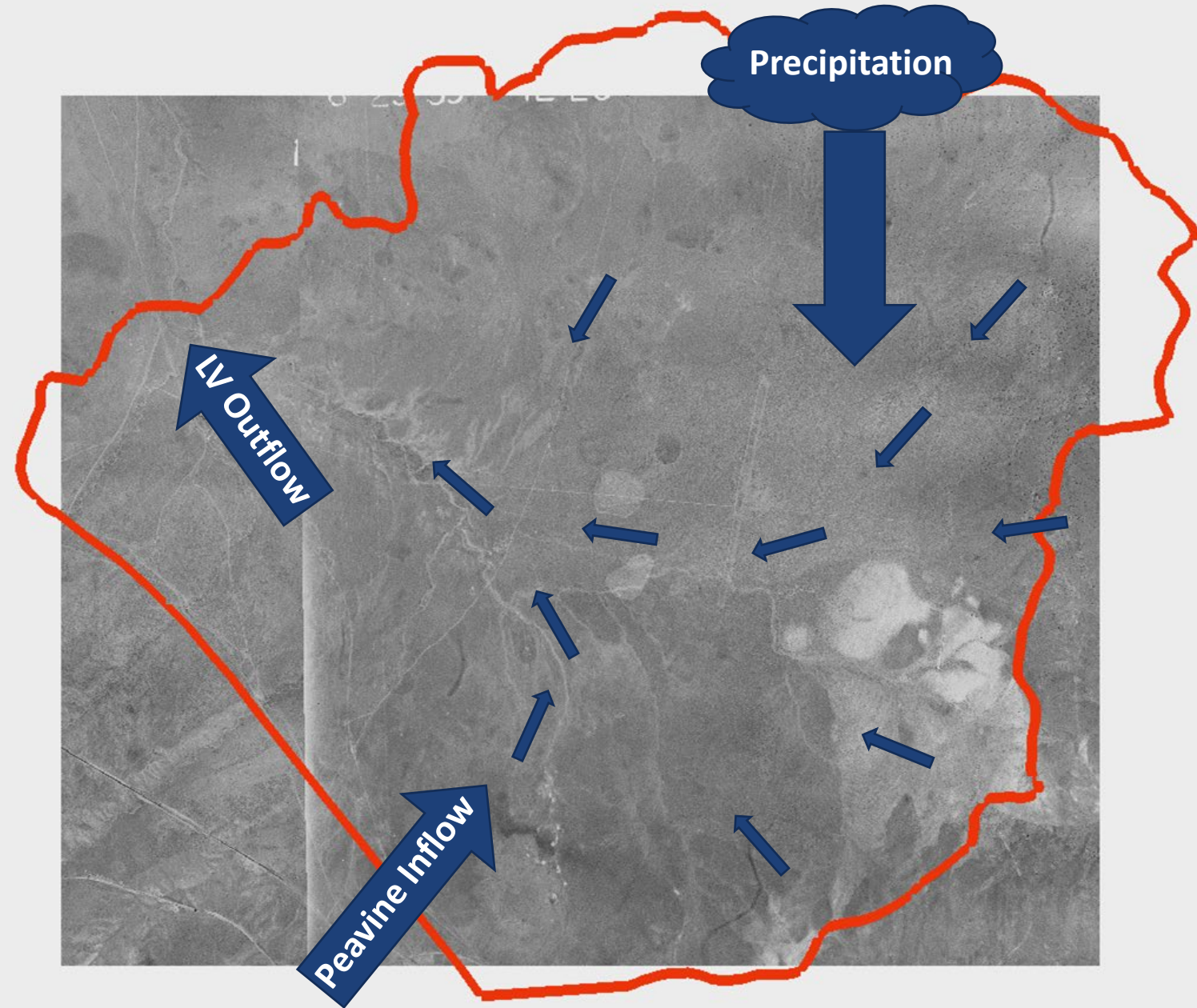
Simplified Groundwater Budget



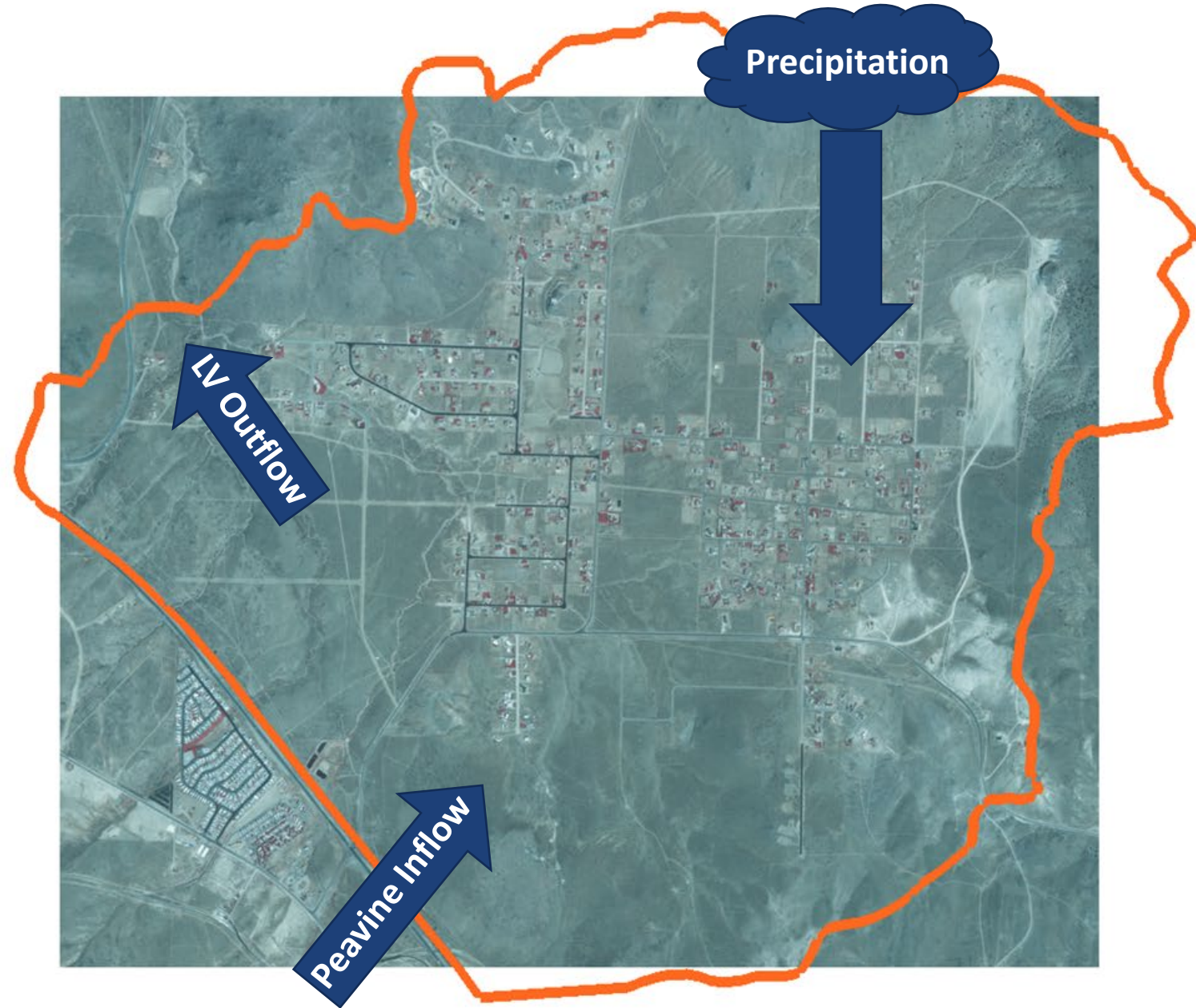
Golden Valley Groundwater Aquifer Recharge Boundary



Water Budget: Natural Conditions

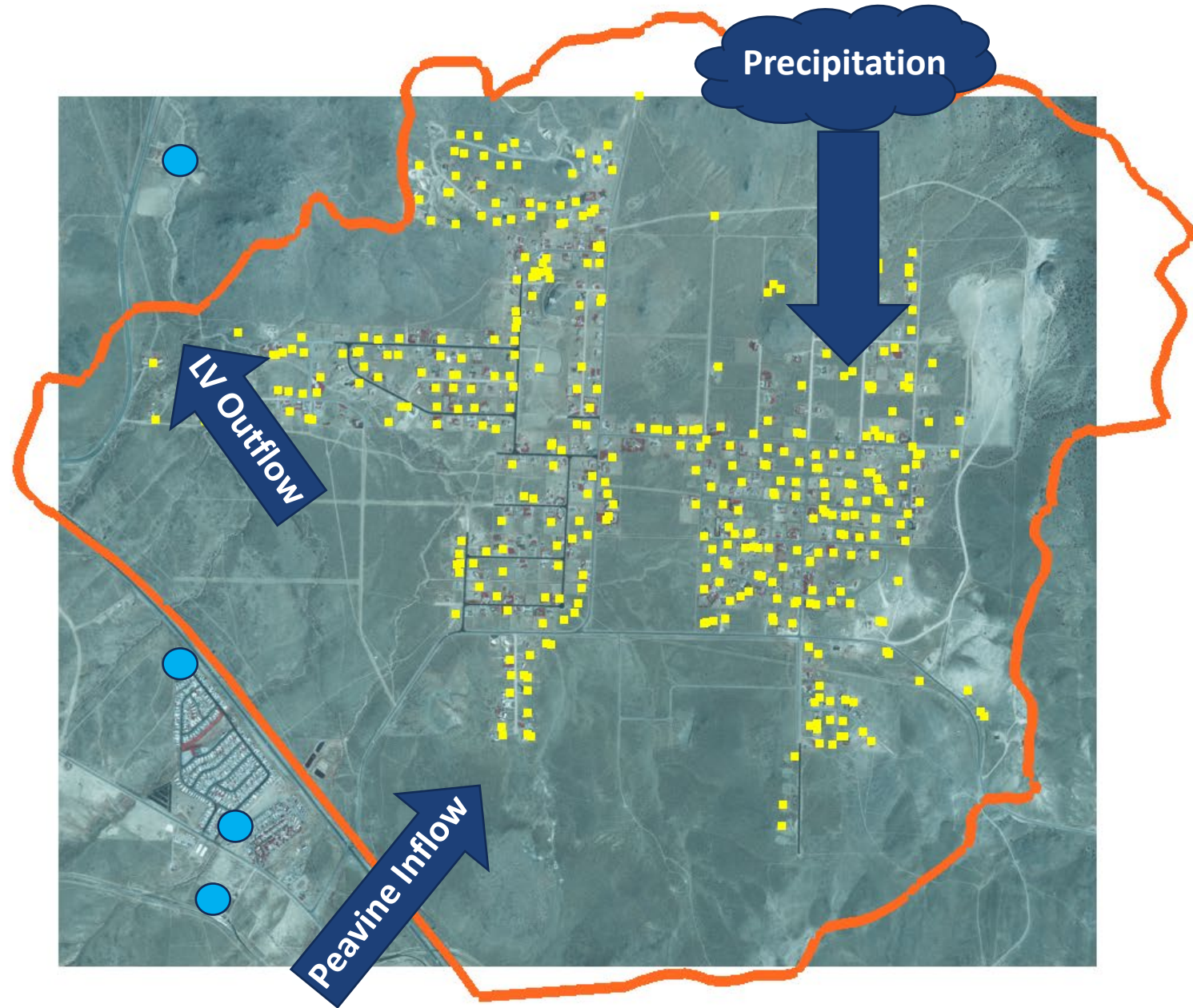


Water Budget: 1980s



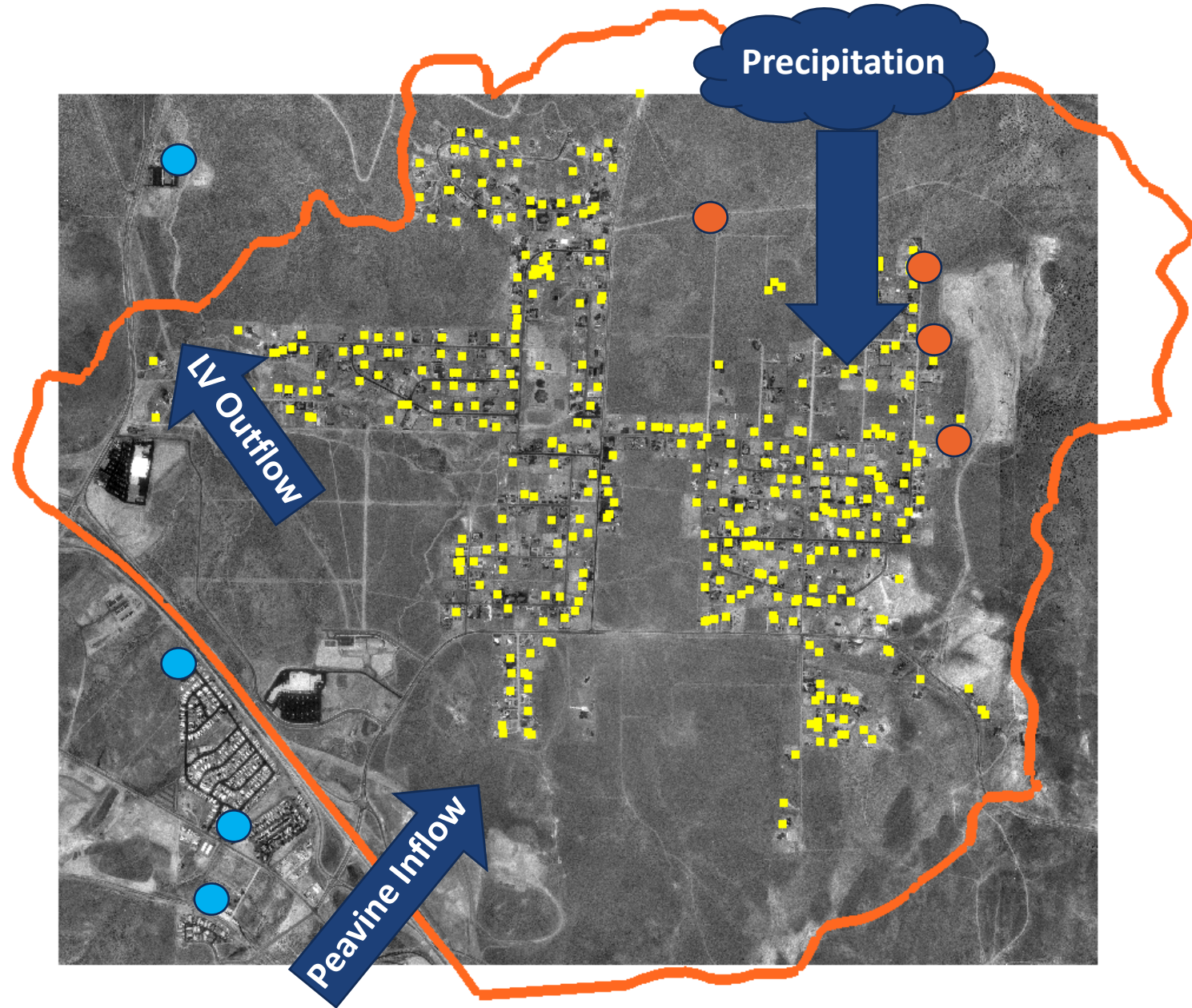
Water Budget: 1980s

- Domestic wells
- Municipal Pumping wells



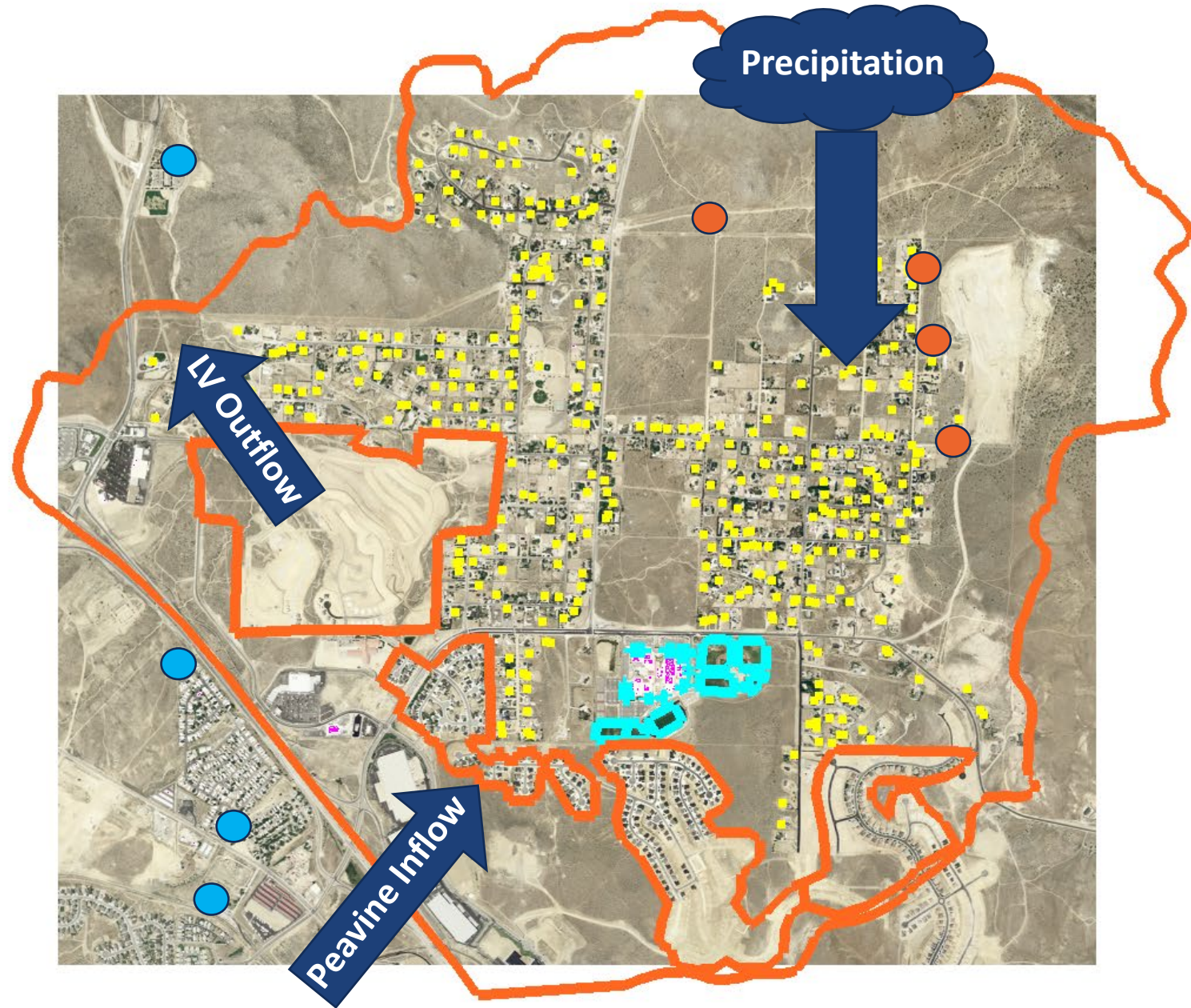
Water Budget: 1990s

- Domestic wells
- Municipal Pumping wells
- Injection wells



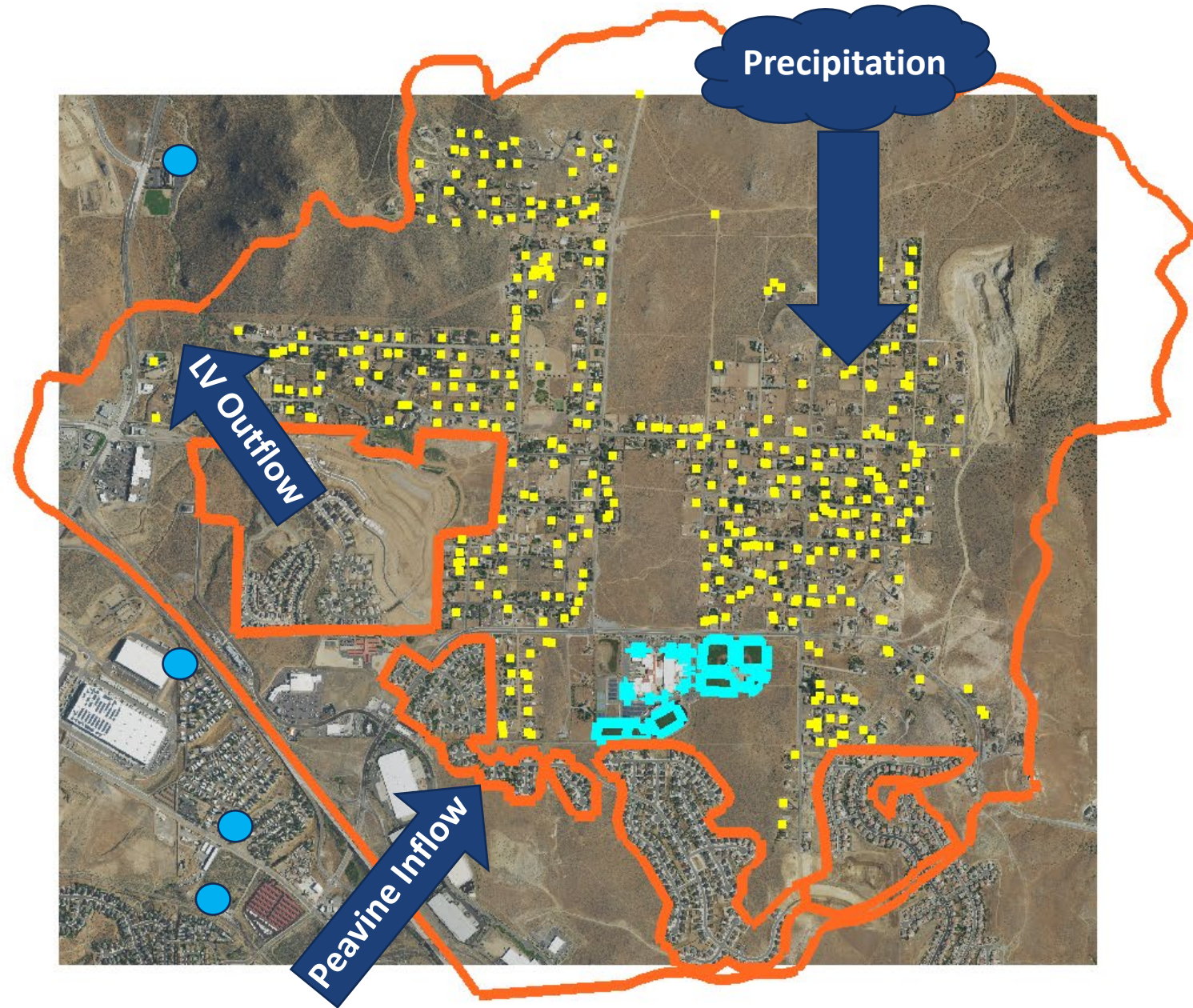
Water Budget: Early to Mid 2000s

- Domestic wells
- Municipal Pumping wells
- Injection wells
- ▭ High School Irrigation
- ▭ Residential Landscaping



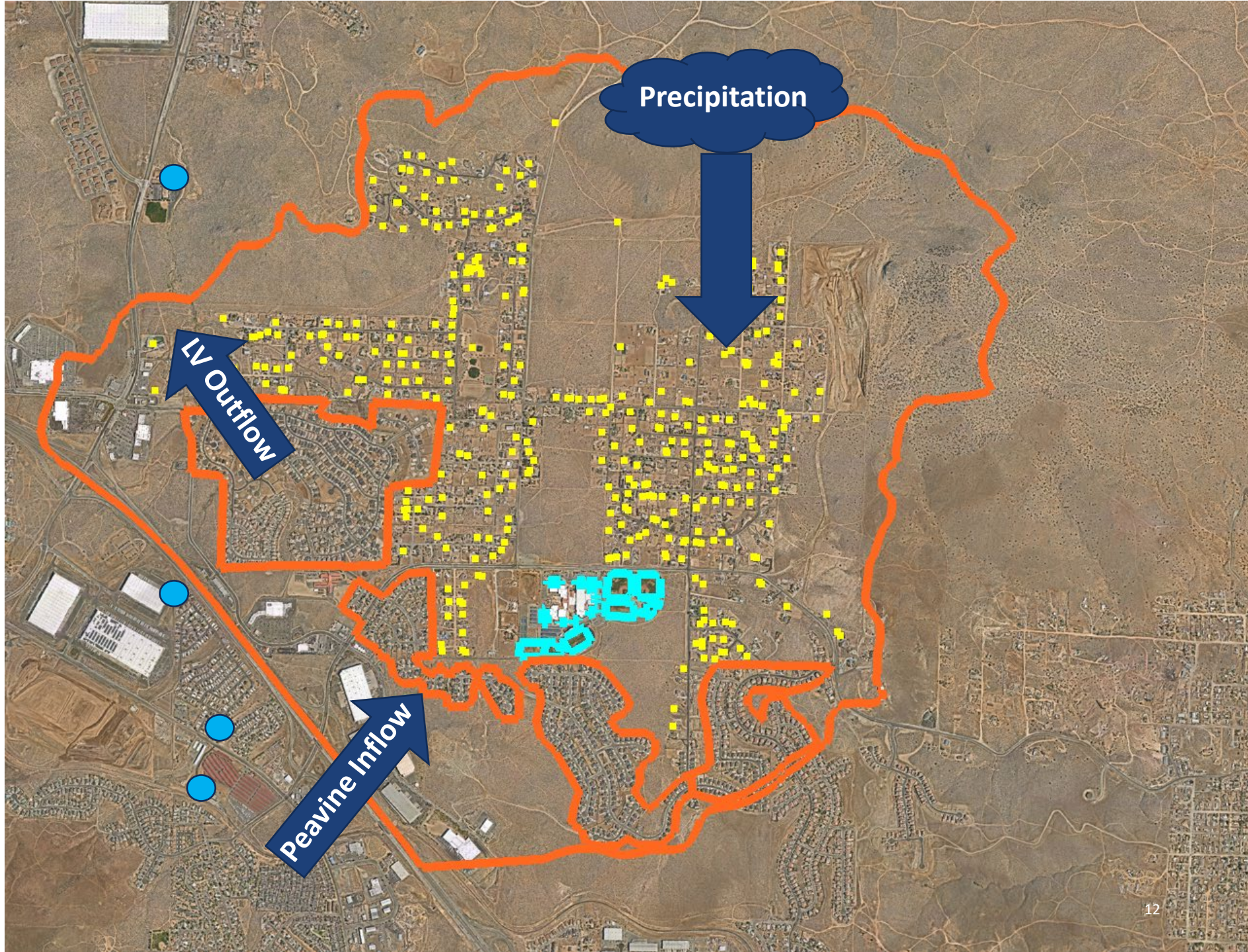
Water Budget: 2010S

- Domestic wells
- Municipal Pumping wells
- ▣ High School Irrigation
- ▭ Residential Landscaping



Water Budget: 2021

- Domestic wells
- Municipal Pumping wells
- ▭ High School Irrigation
- ▭ Residential Landscaping



Summary of Golden Valley Water Budget, 1991 - 2021

Major Inflows

- Precipitation
- Peavine Inflow

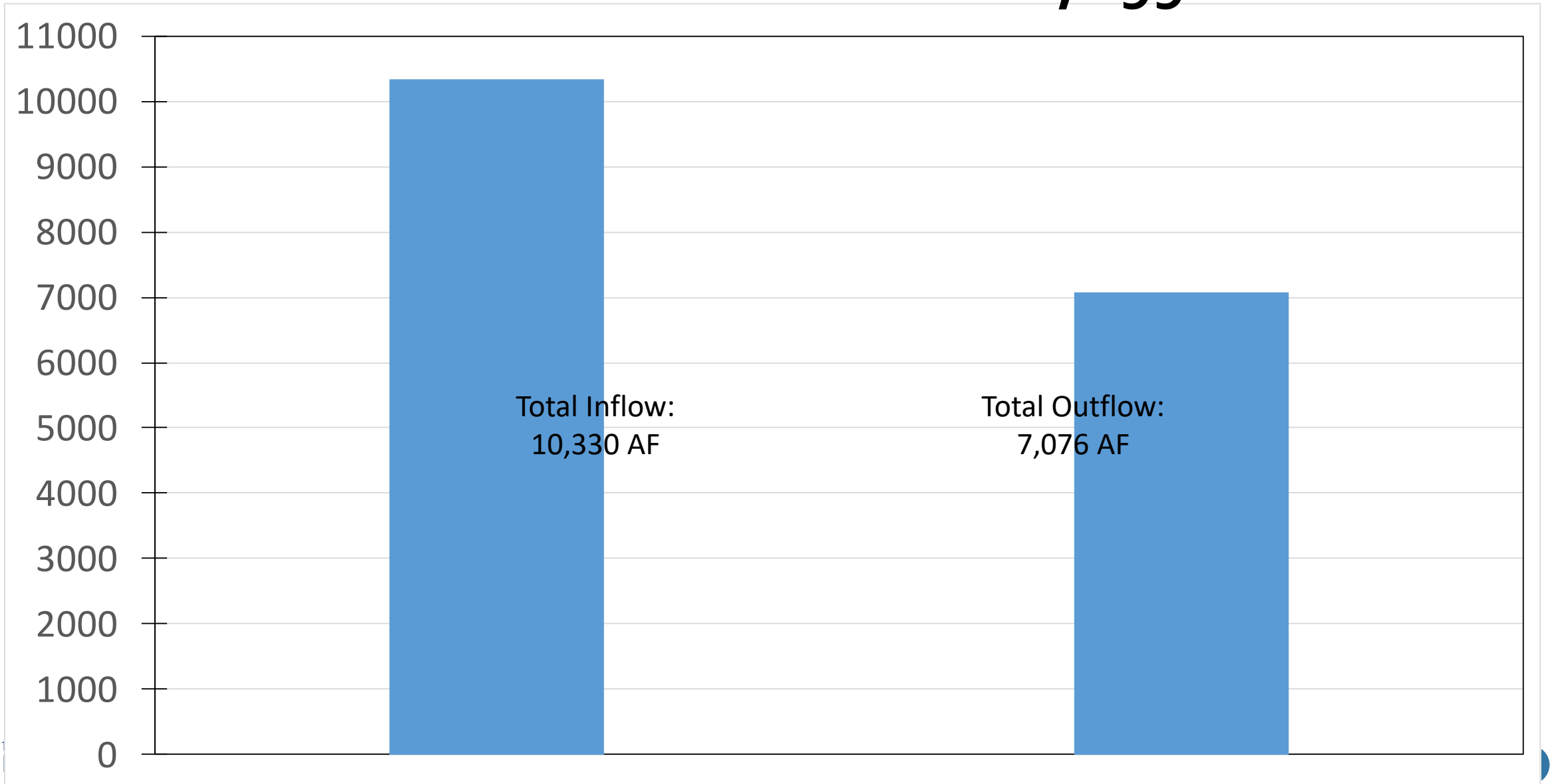
Minor Inflows

- Injection
- High School Irrigation
- Residential Landscaping

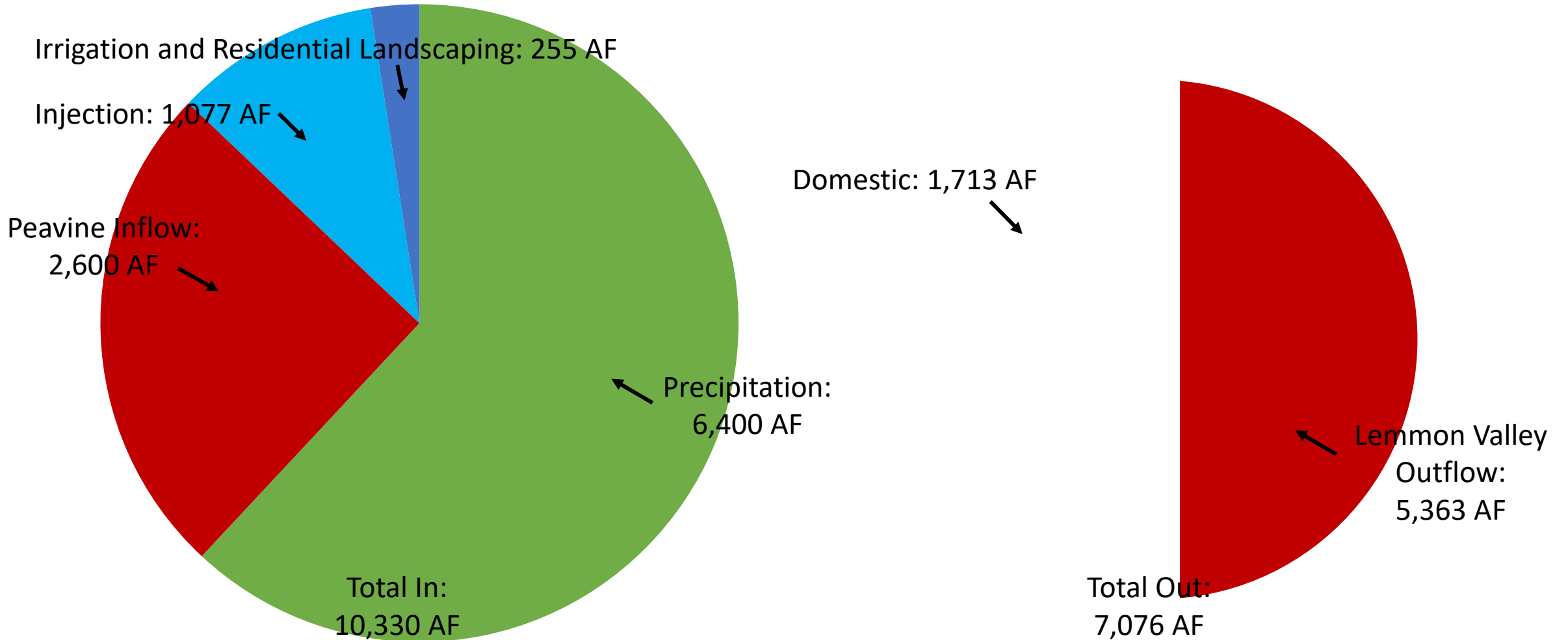
Outflows

- Lemmon Valley Outflow
- Domestic Wells

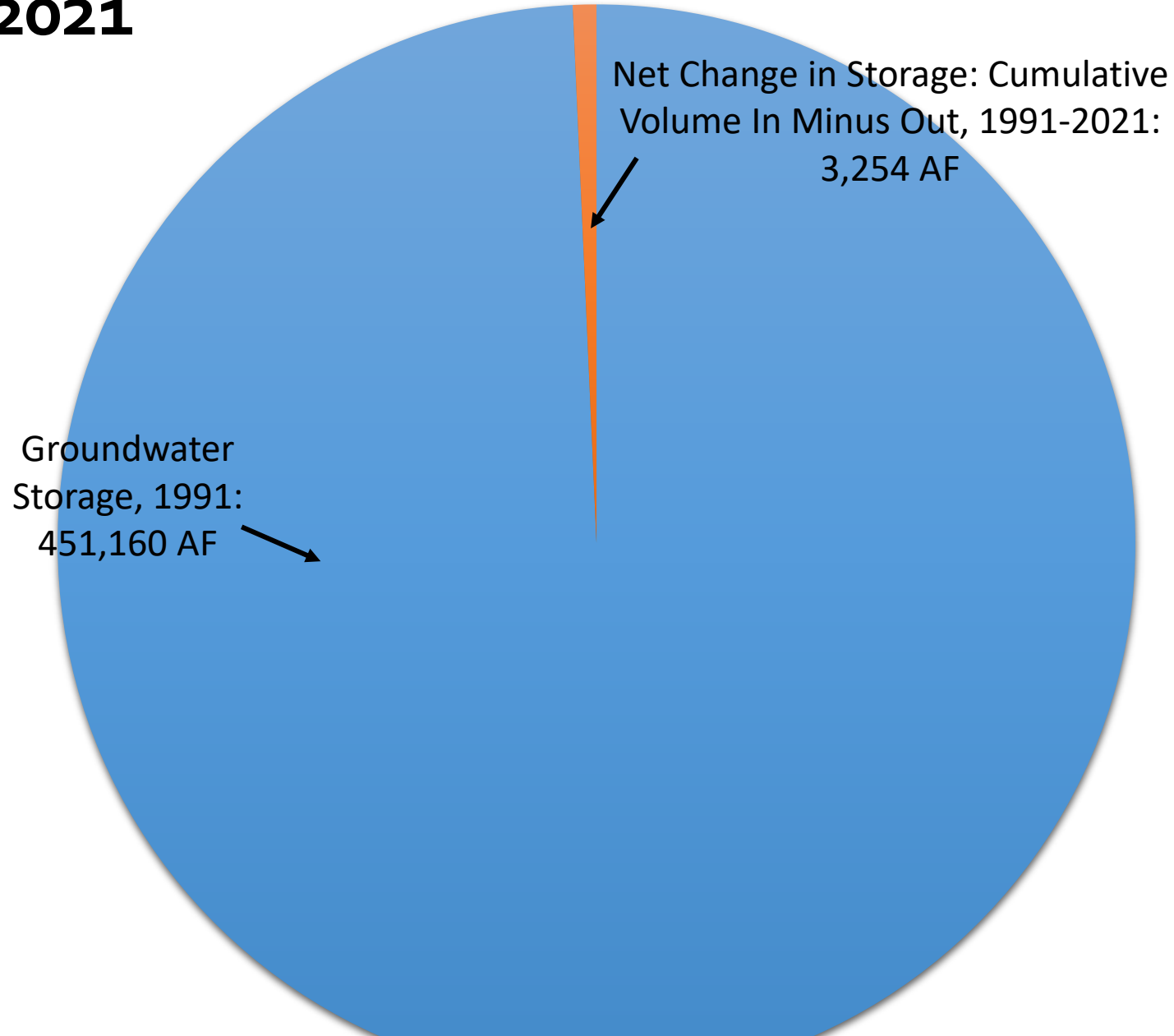
Cumulative Volume Into and Out of Basin, 1991 - 2021



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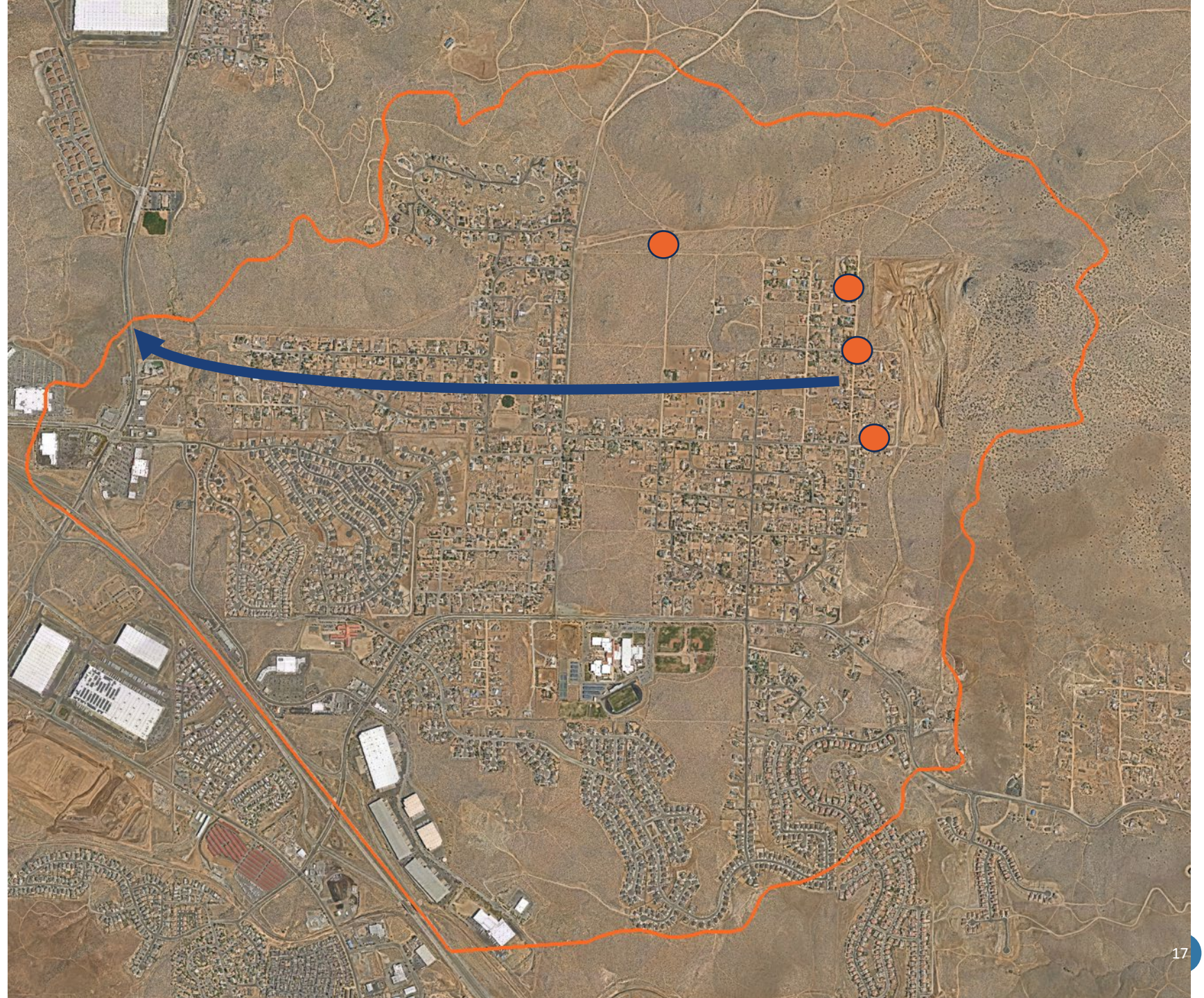


Groundwater Storage in 1991 and Net Change in Storage from 1991 to 2021



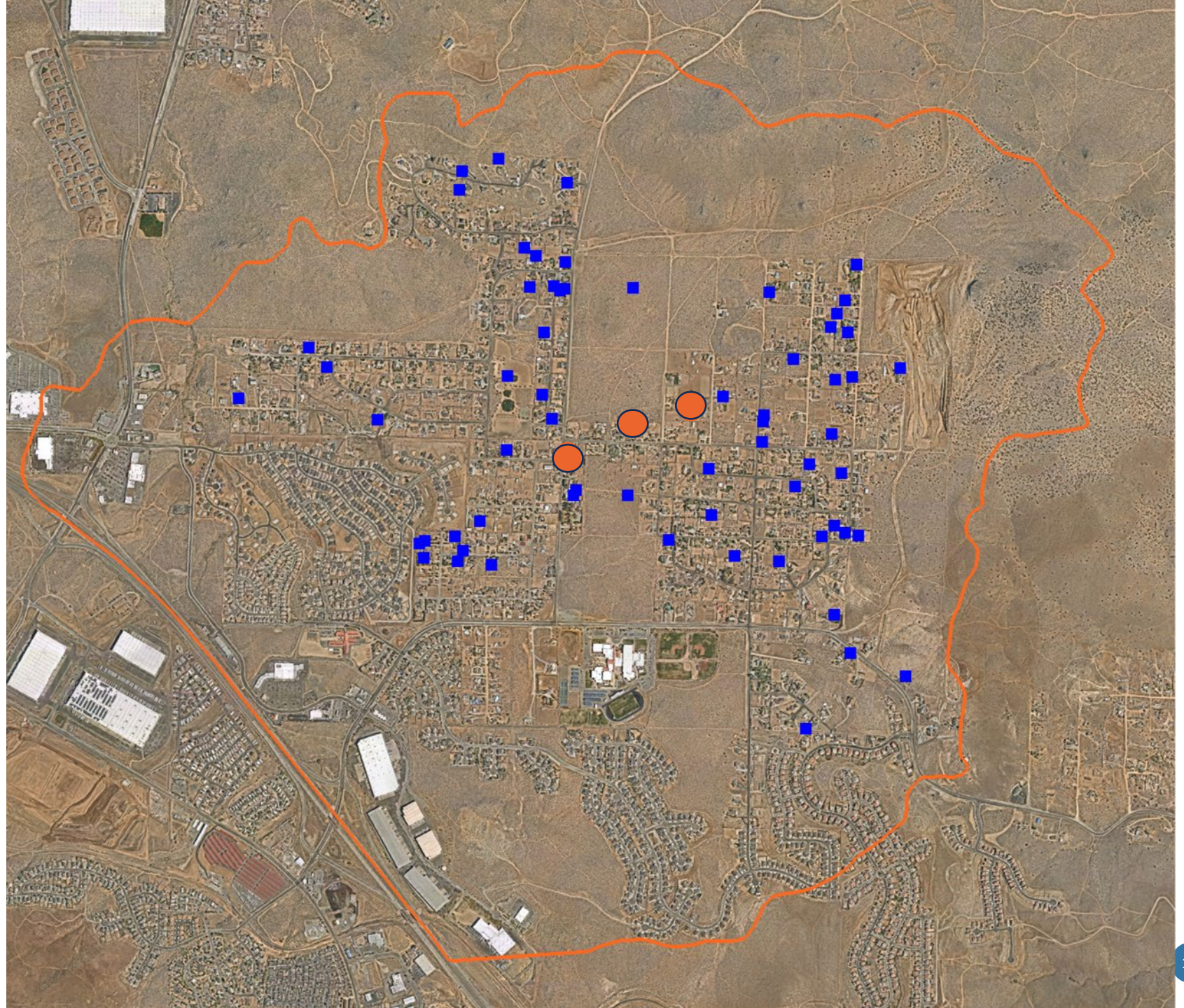
Groundwater Travel Times

- Unconsolidated Sediments: 40 years to cross the basin
- Bedrock: >500 years to cross the basin

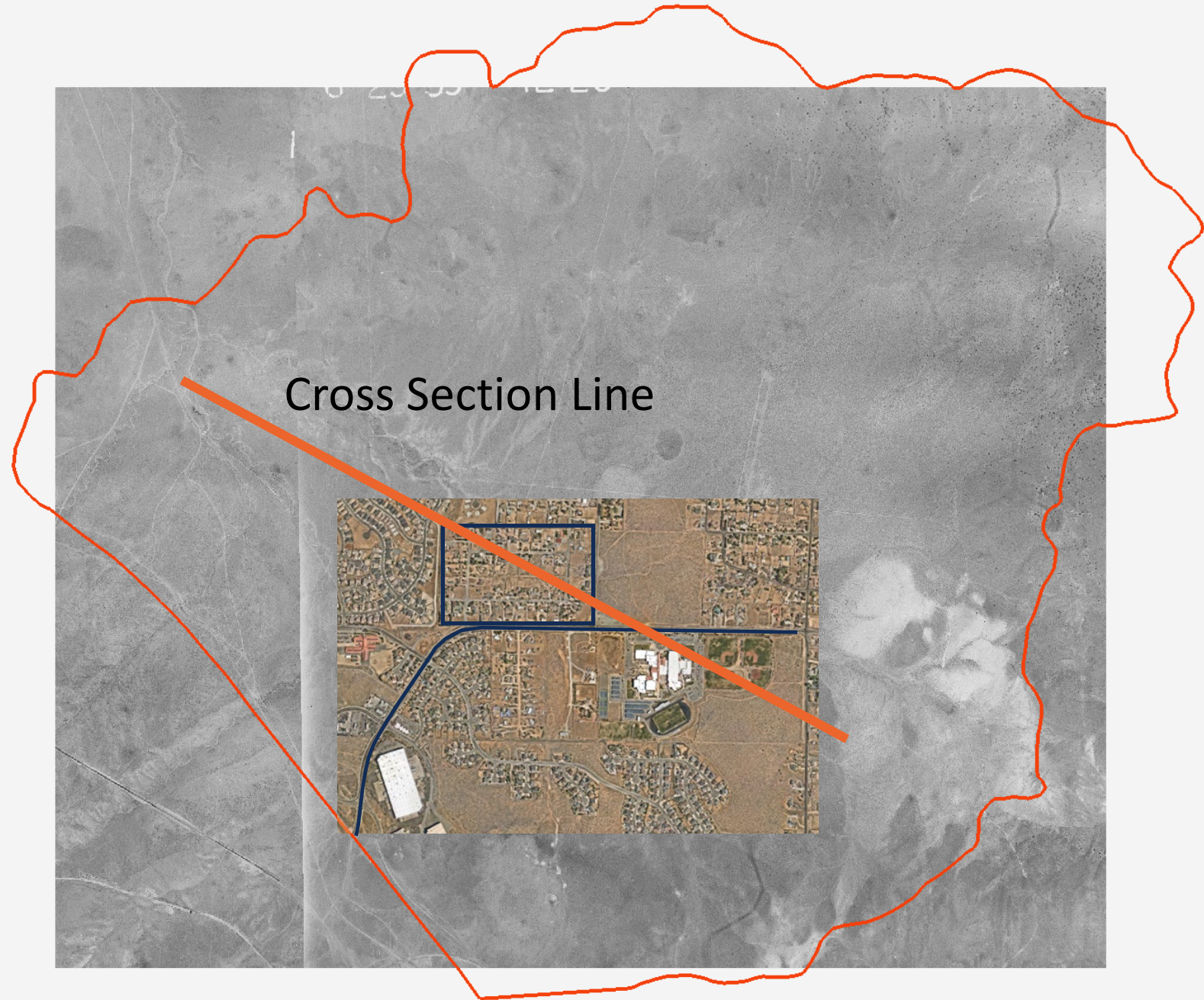


Water Level Monitoring Program

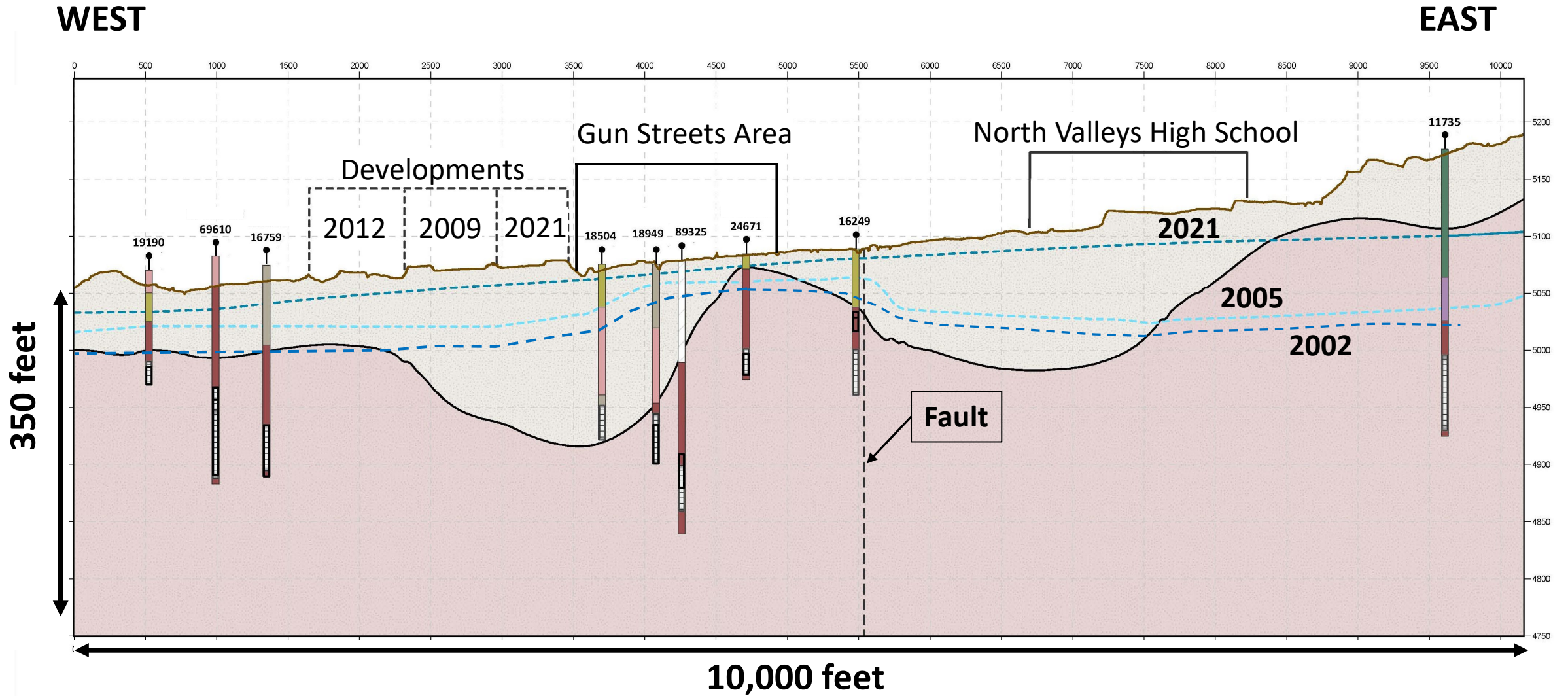
- Domestic Wells
- GV Monitor Wells



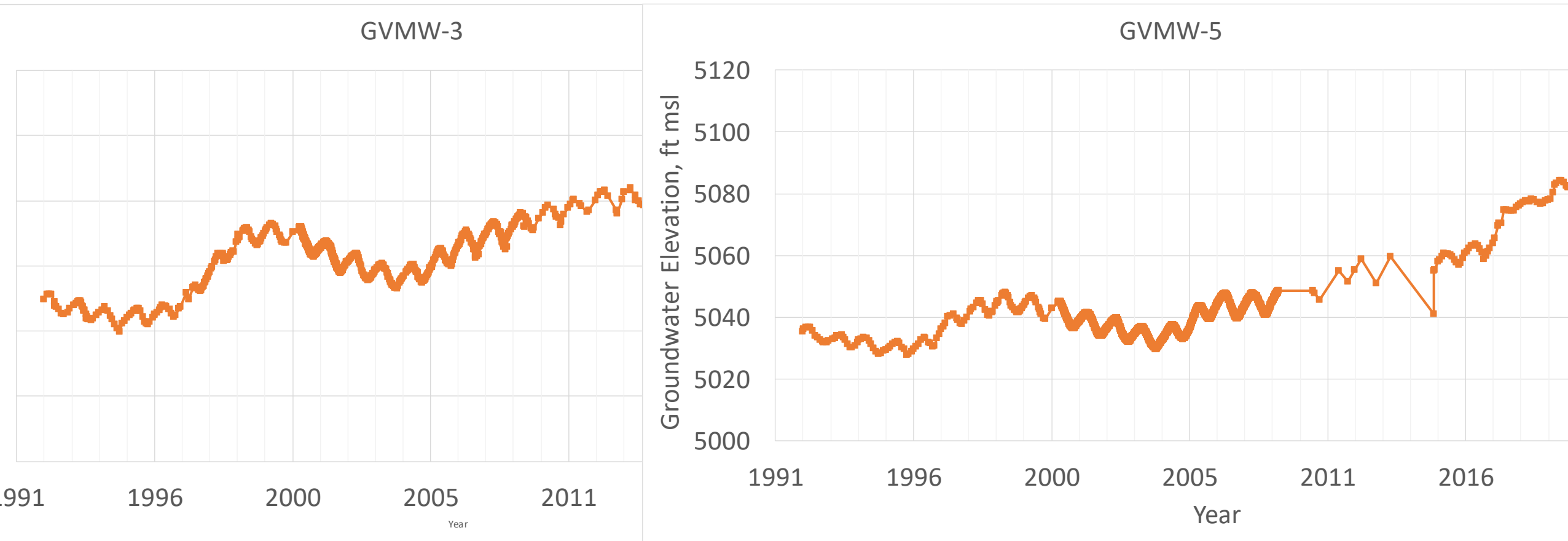
Elevated Water Levels at the Gun Streets



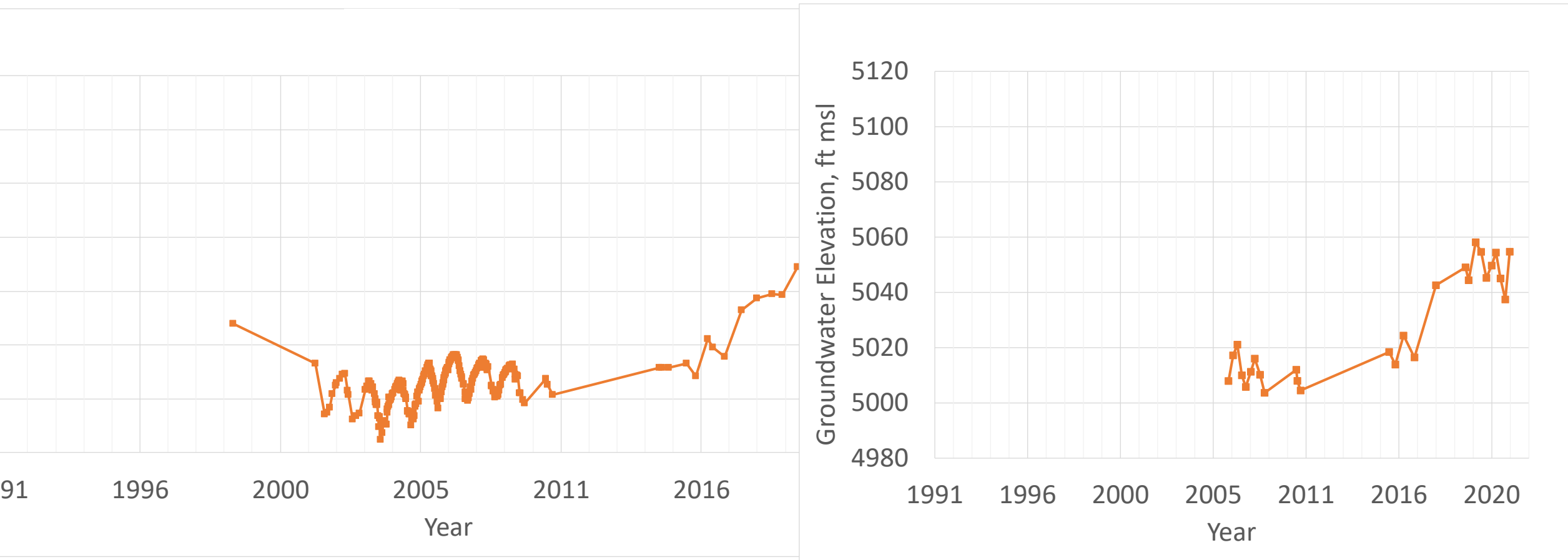
Cross Section through Gun Streets



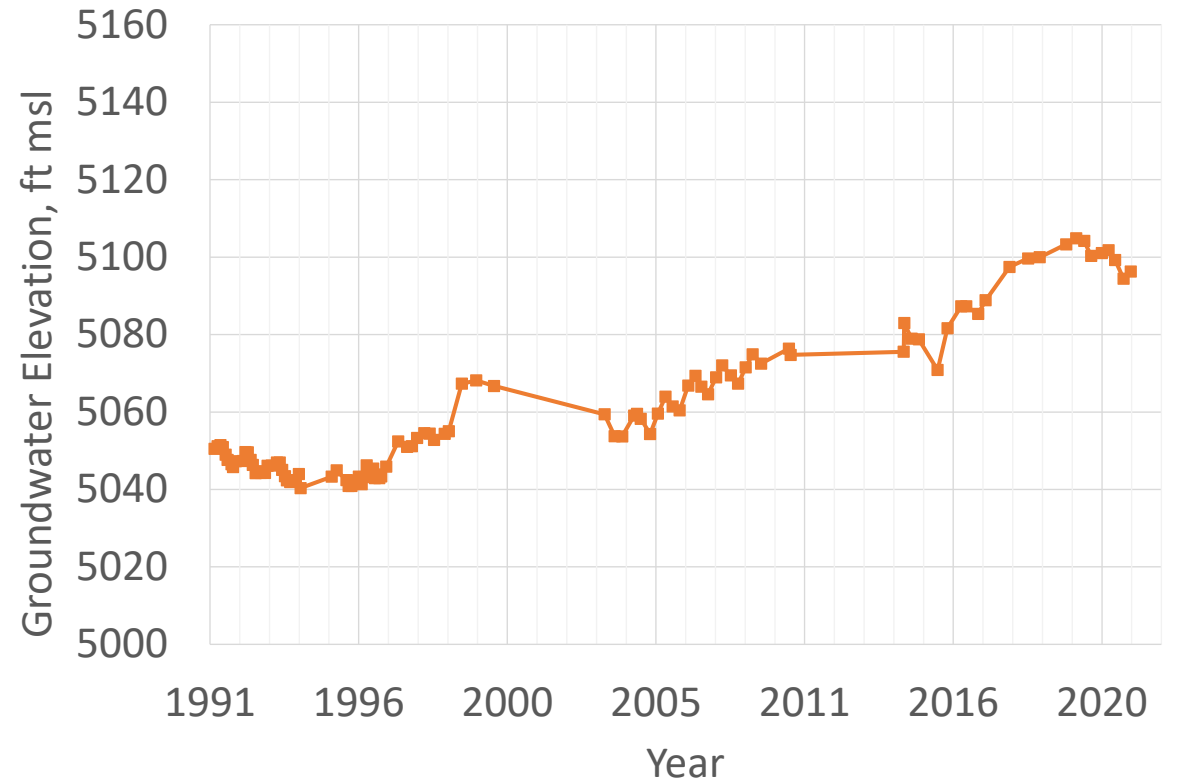
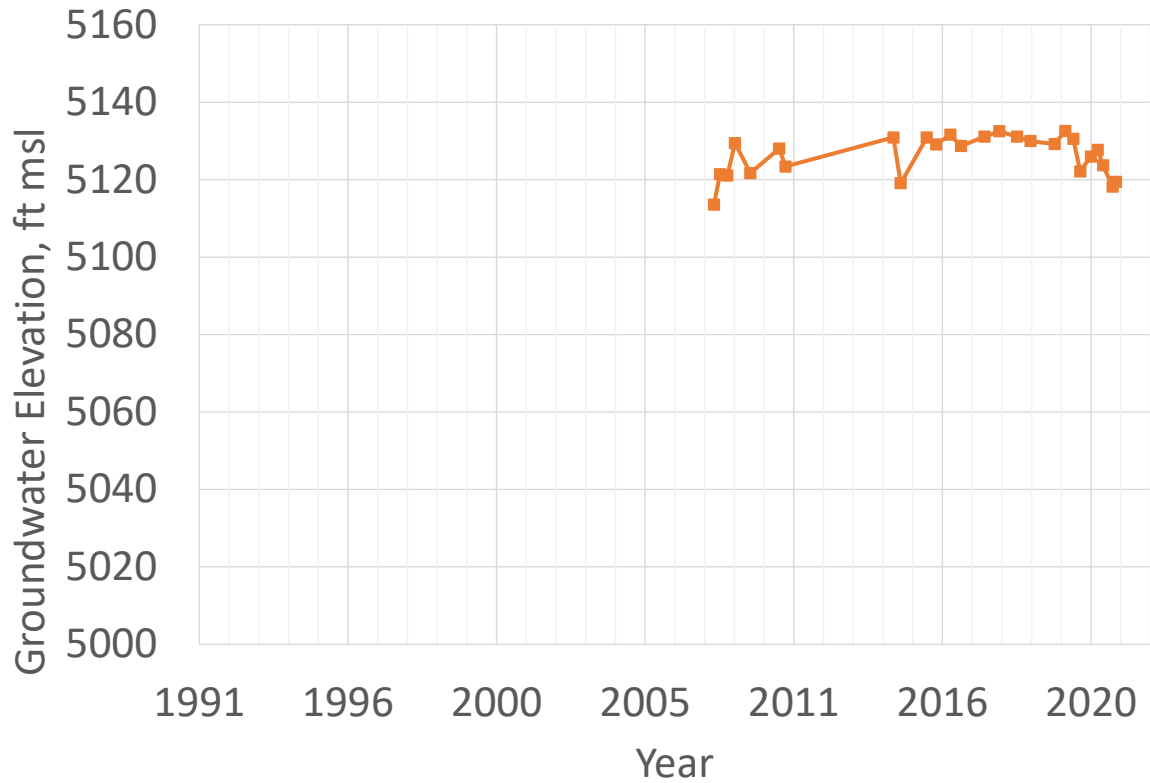
Hydrographs: Central Basin



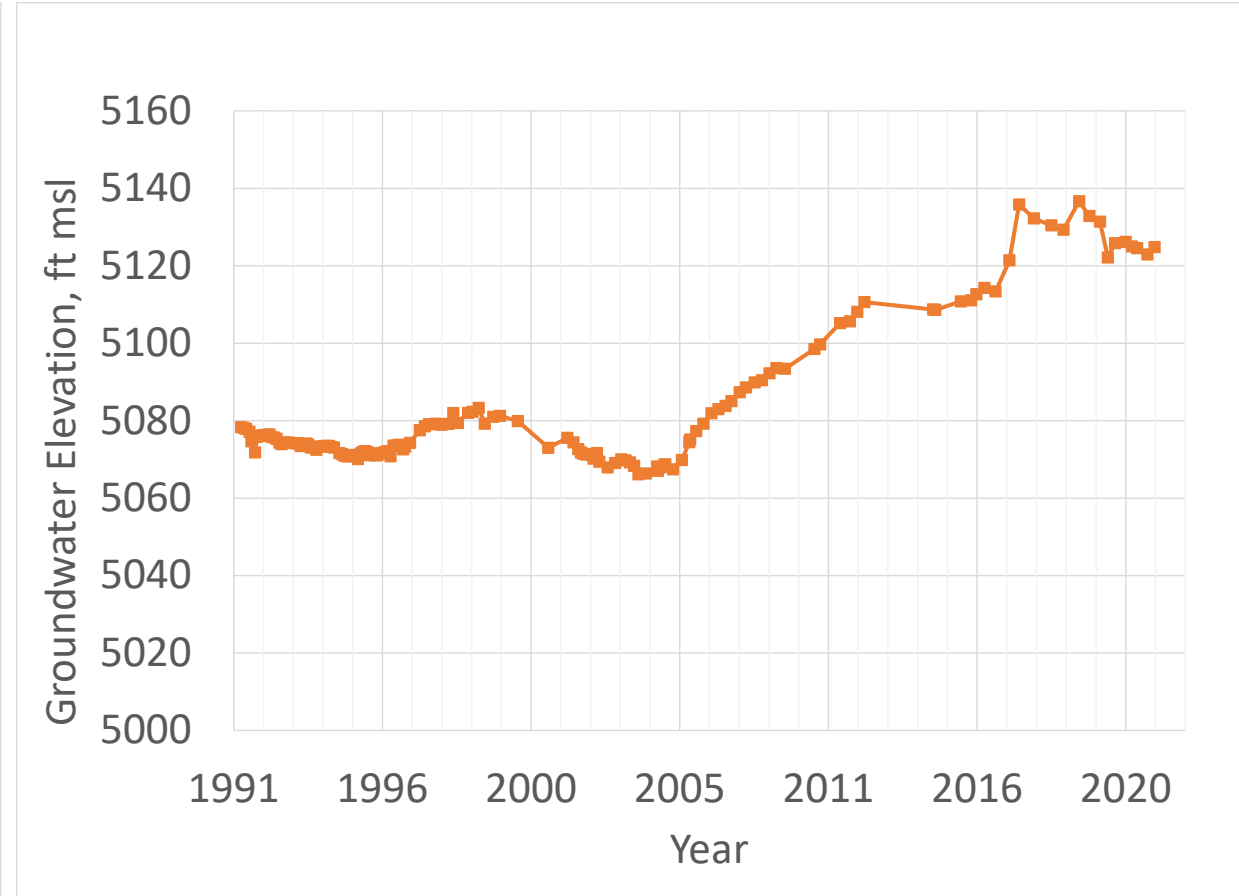
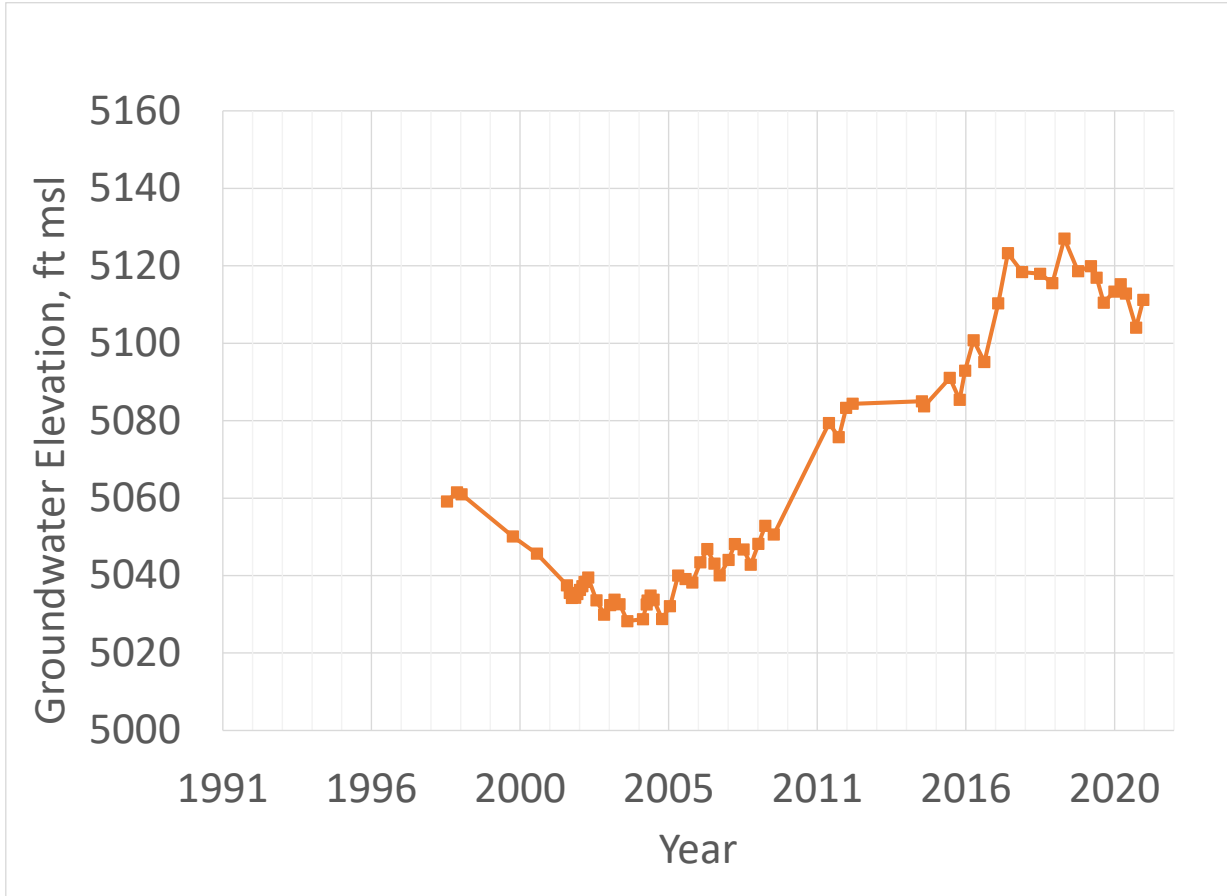
Hydrographs: Northwest



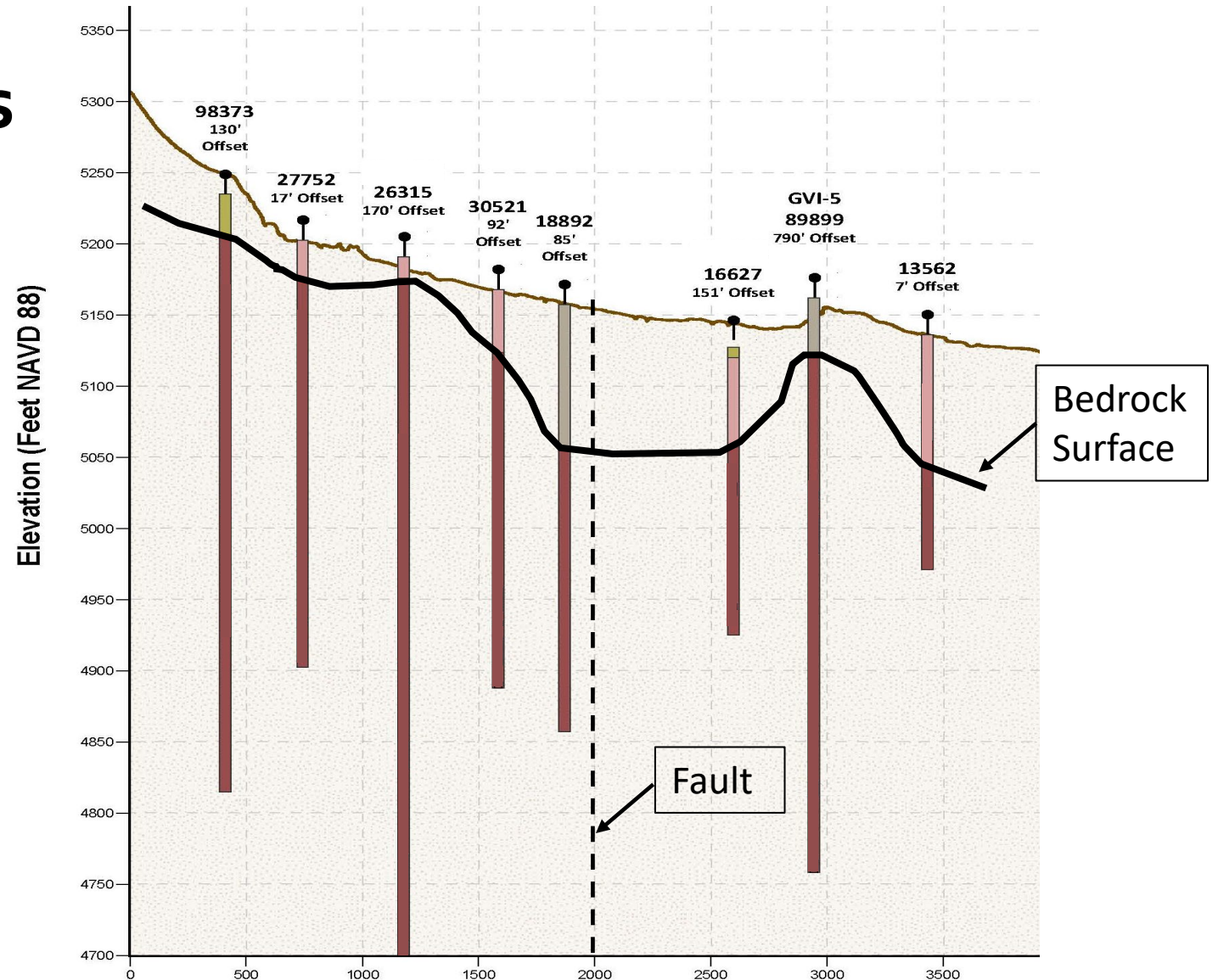
Hydrographs: Northeast/East



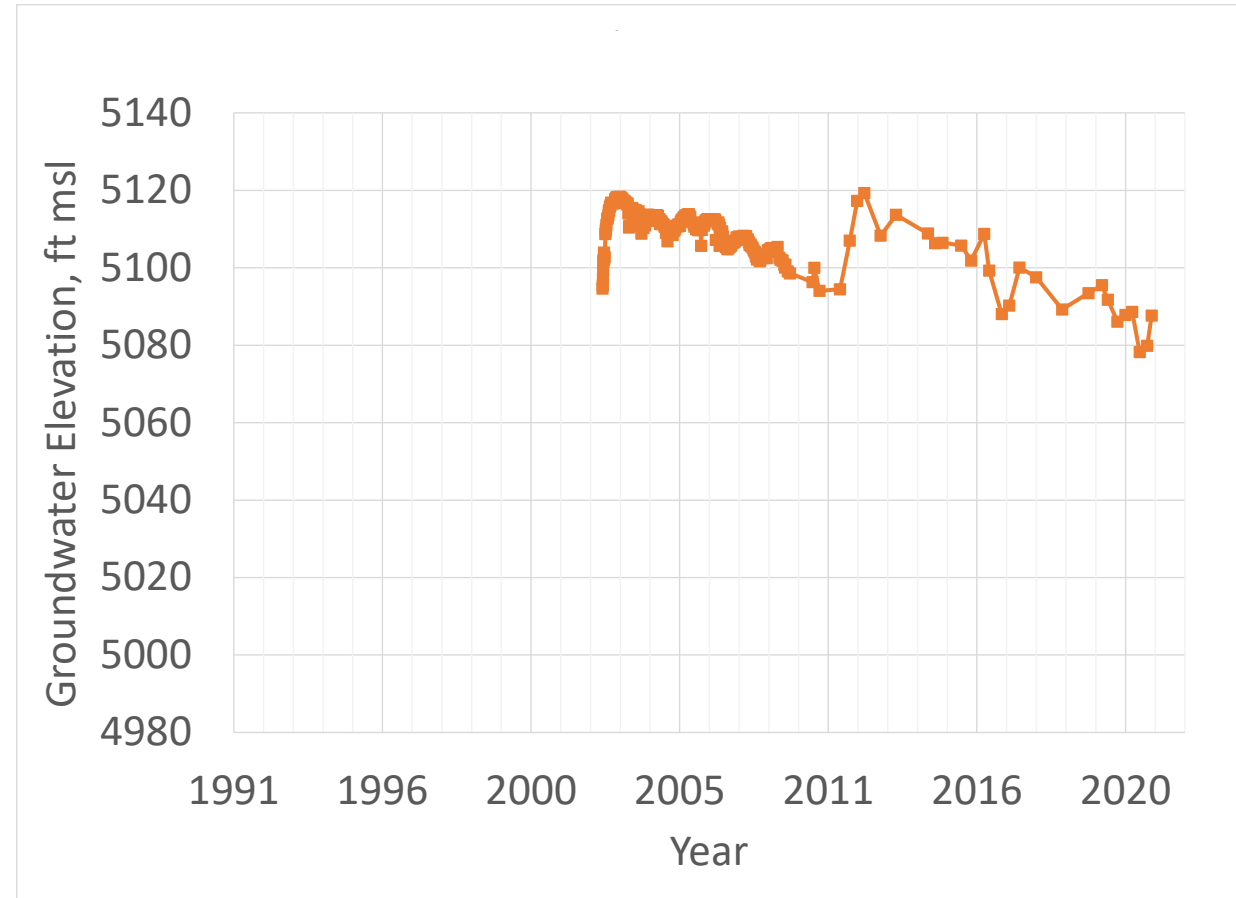
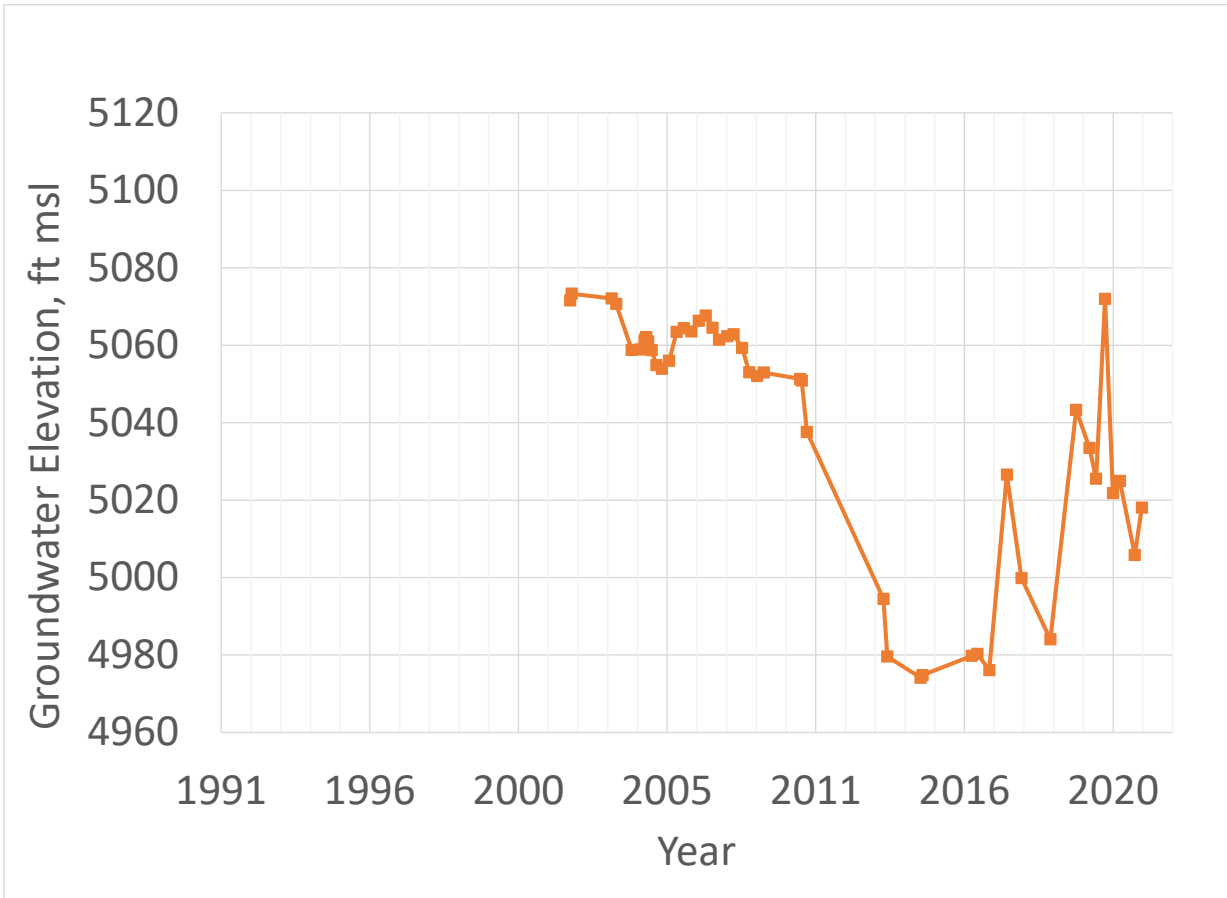
Hydrographs: Southeast



Declining Water Levels in the Northwest Flanks



Hydrographs: Northwest Flanks



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Thank You

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 www.terrphase.com

