Sustainability Indicators

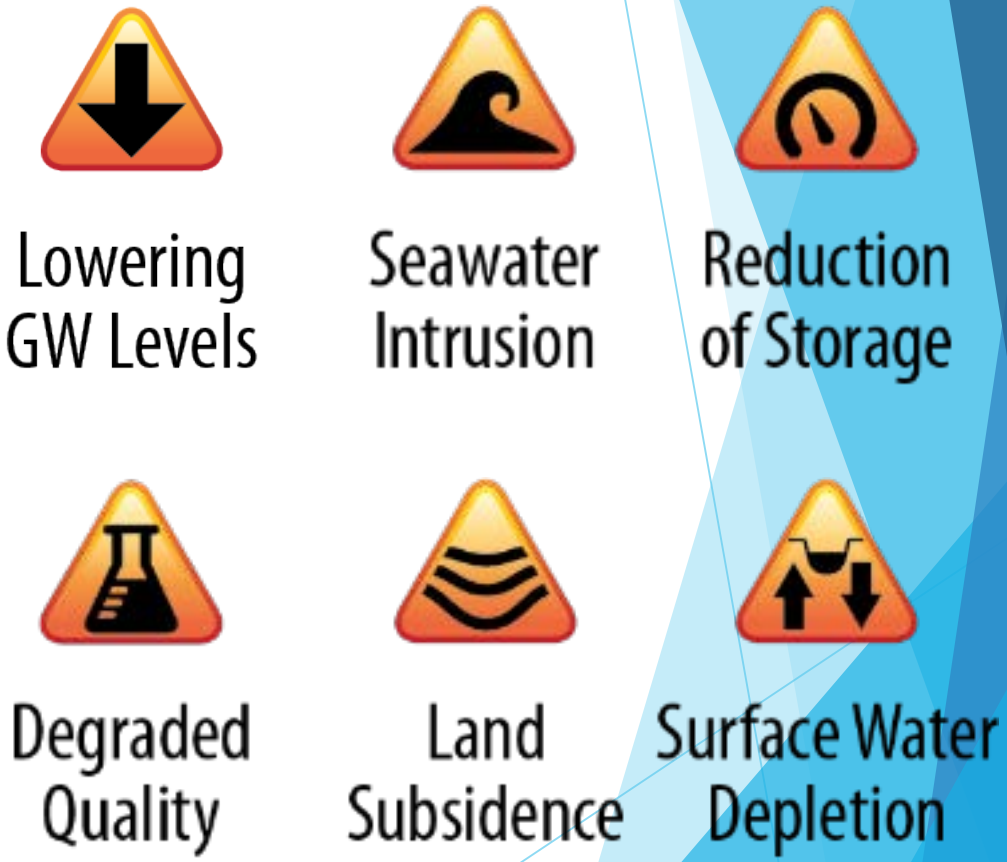
Board Meeting & Workshop

July 25, 2019

SMGWA

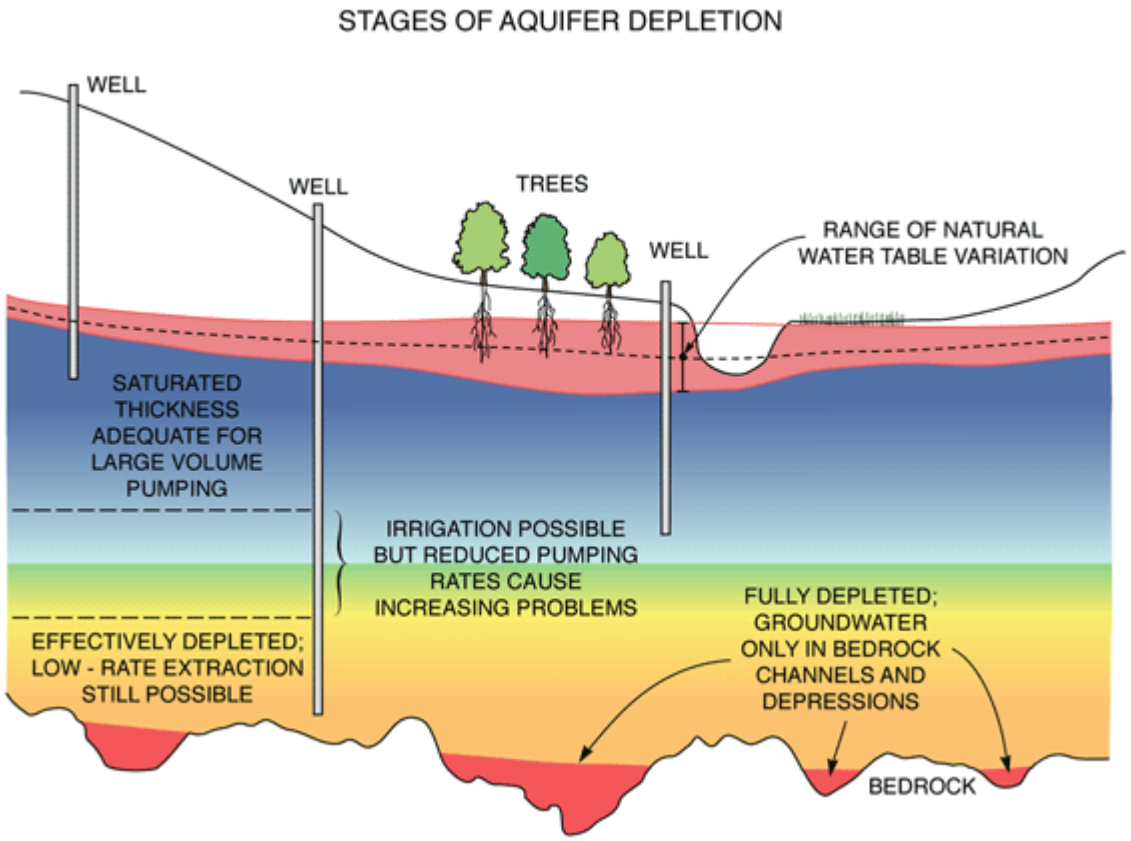
Sustainability Indicators

- Sustainability indicators are the effects caused by groundwater conditions occurring throughout the basin that, when significant and unreasonable, become undesirable results



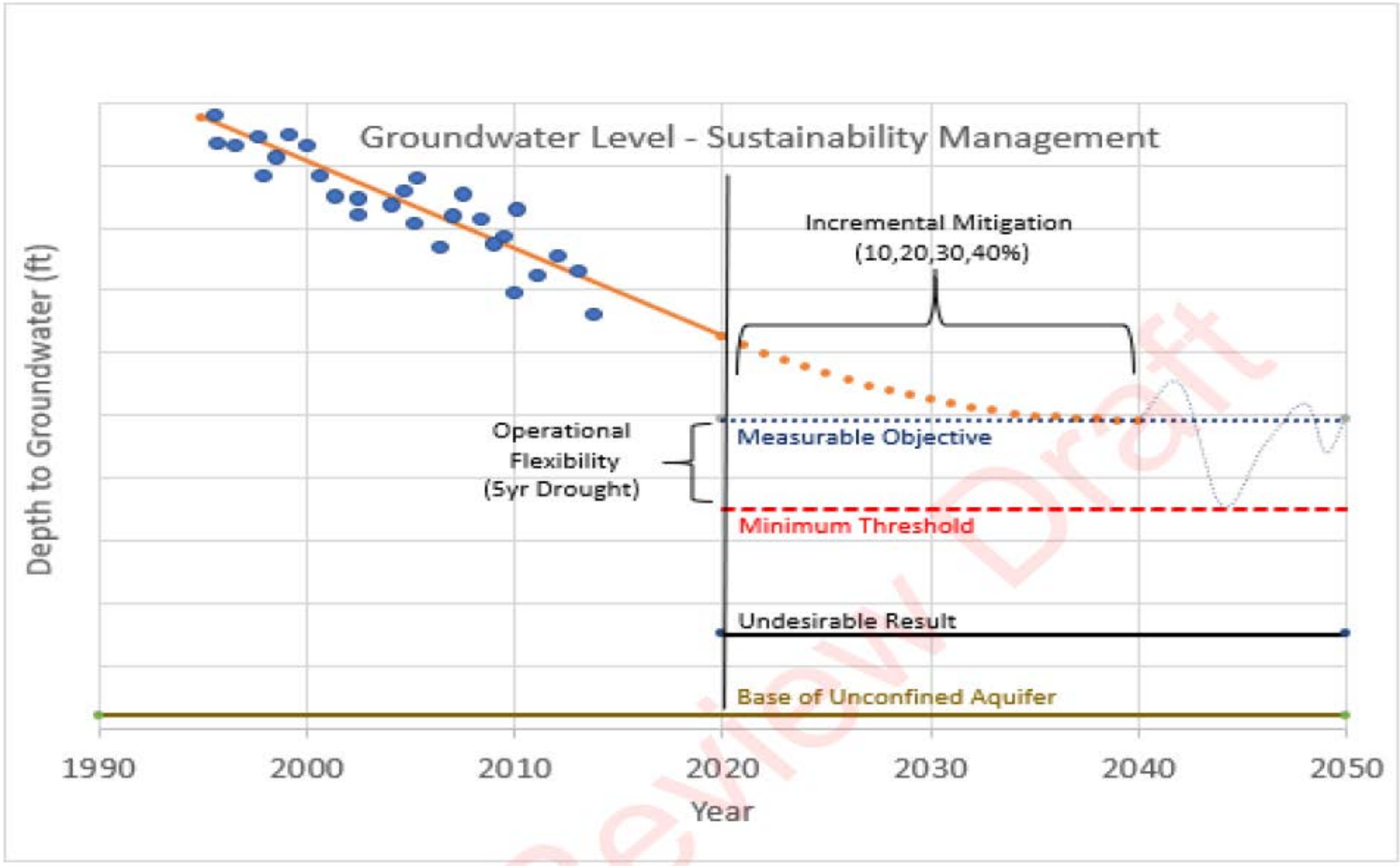
Chronic Lowering of Groundwater Levels

- Significant and unreasonable depletion of groundwater supply if continued over the next 50 years



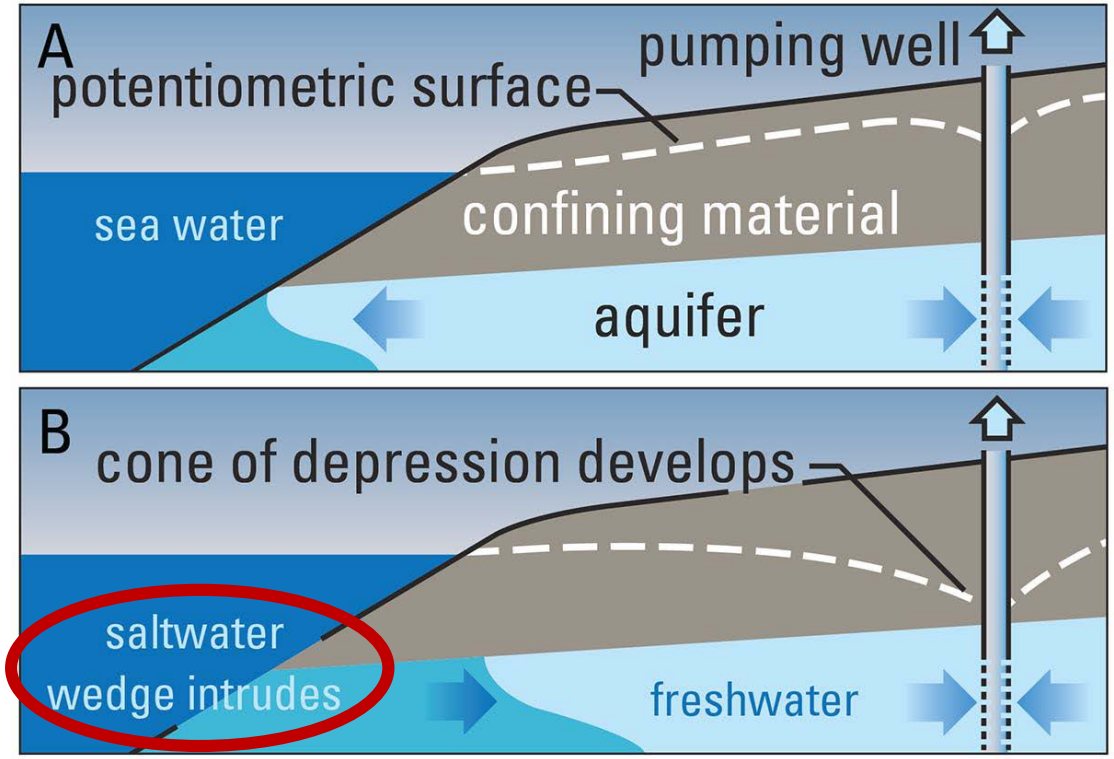
Note: this is a simplified unconfined aquifer example

North Fork Kings GSA – GW Level



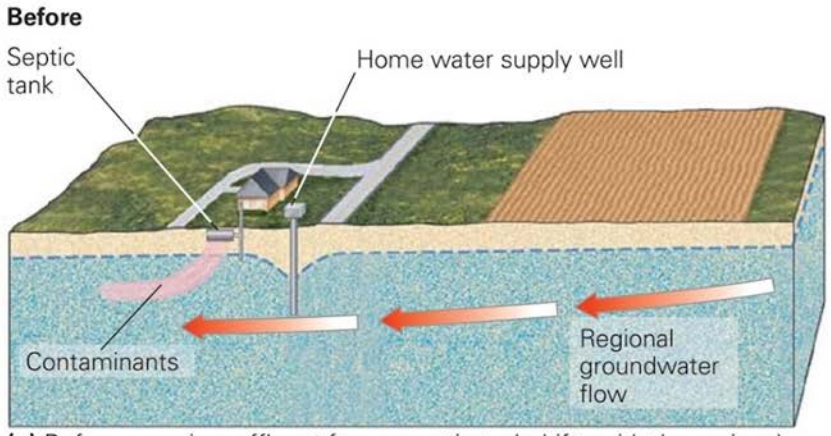
Seawater Intrusion

- Significant and unreasonable seawater intrusion
- Effects overlying land uses and direct use of groundwater
- Not applicable in Santa Margarita Basin

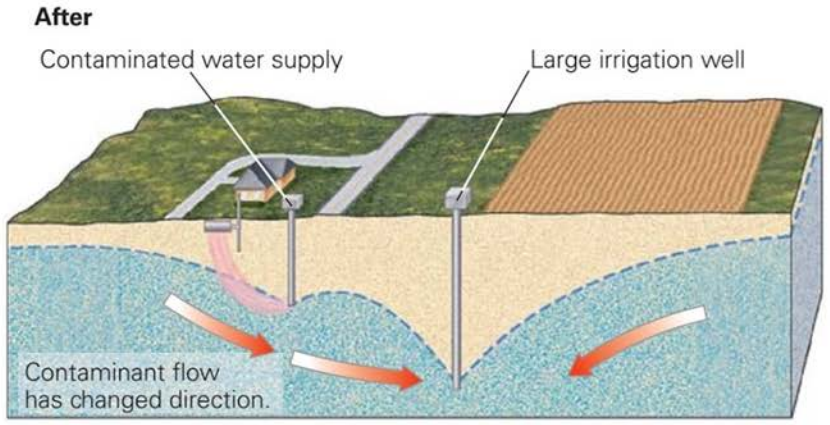


Degraded Groundwater Quality

- Significant and unreasonable degraded groundwater quality caused by projects and management actions
- This is a “do no harm” indicator – not required to address existing groundwater quality issues but cannot cause them to get worse
- Including the migration of contaminant plumes that impair water supplies



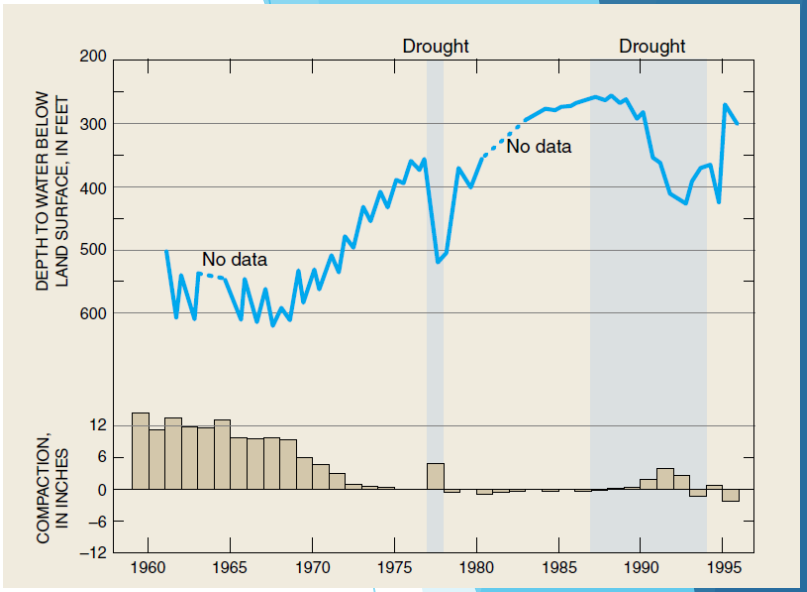
(a) Before pumping, effluent from a septic tank drifts with the regional groundwater flow, and the home well pumps clean water.



(b) After pumping by a nearby irrigation well, effluent flows into the home well in response to the new local slope of the water table.

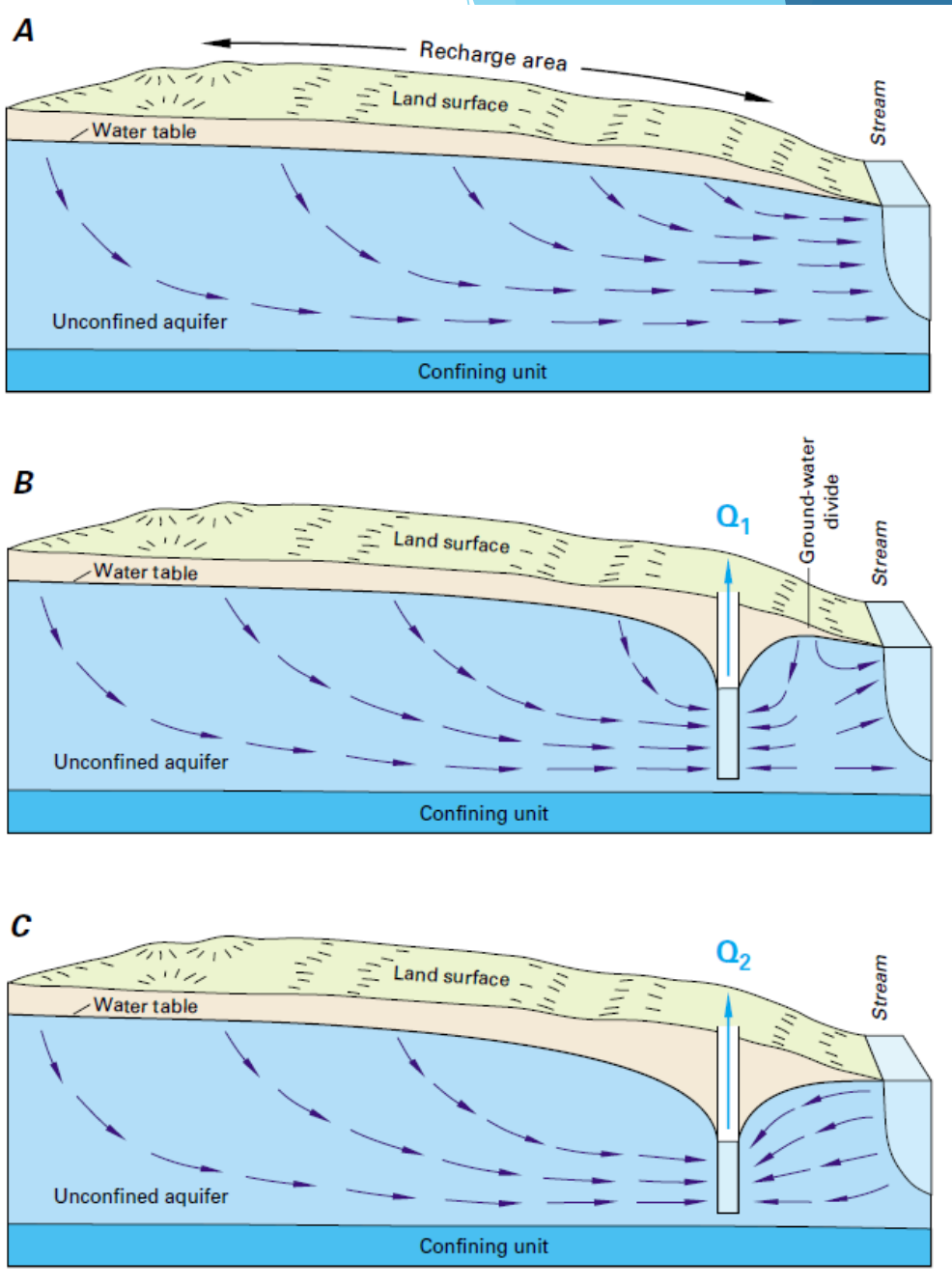
Land Subsidence

- Significant and unreasonable land subsidence caused by changes in groundwater levels that substantially interferes with surface land uses
- Not applicable in Santa Margarita Basin

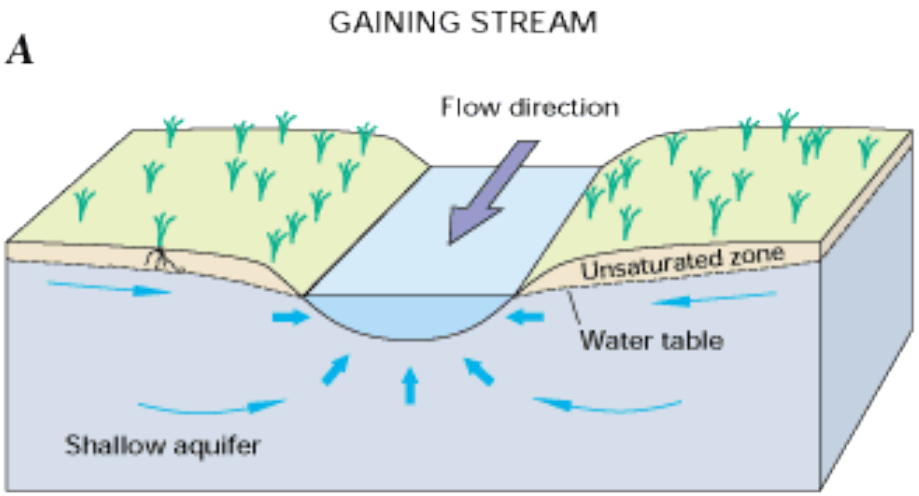


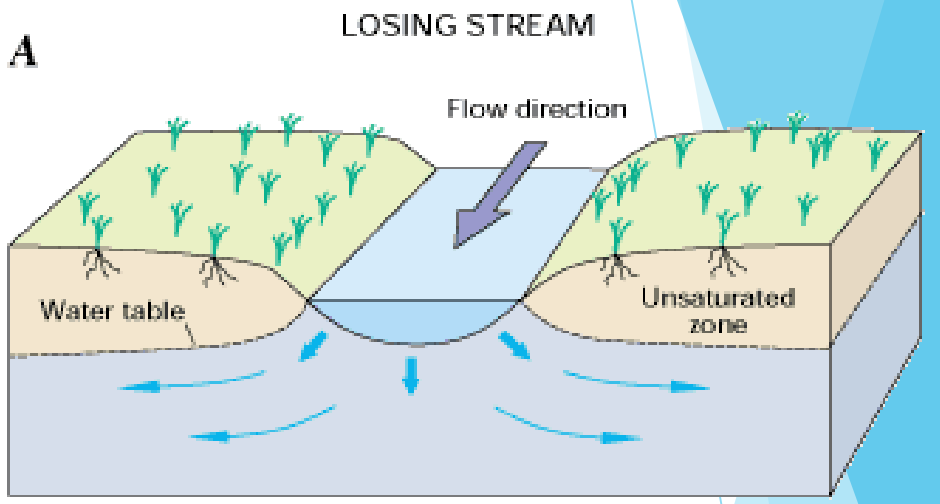
Depletion of Interconnected Surface Water

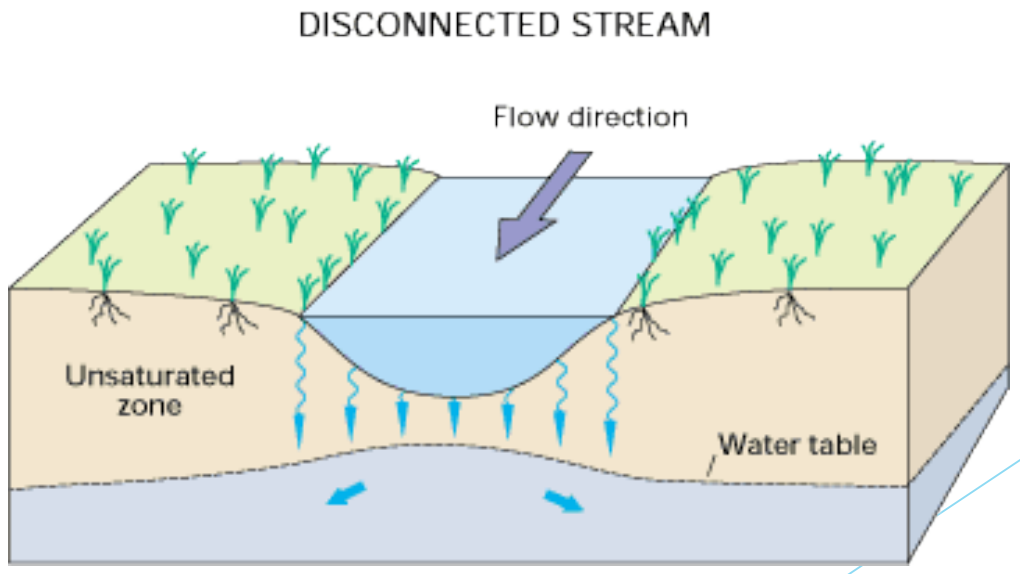
- Depletions of interconnected surface water caused by use of groundwater that have significant and unreasonable adverse impacts on beneficial uses of the surface water



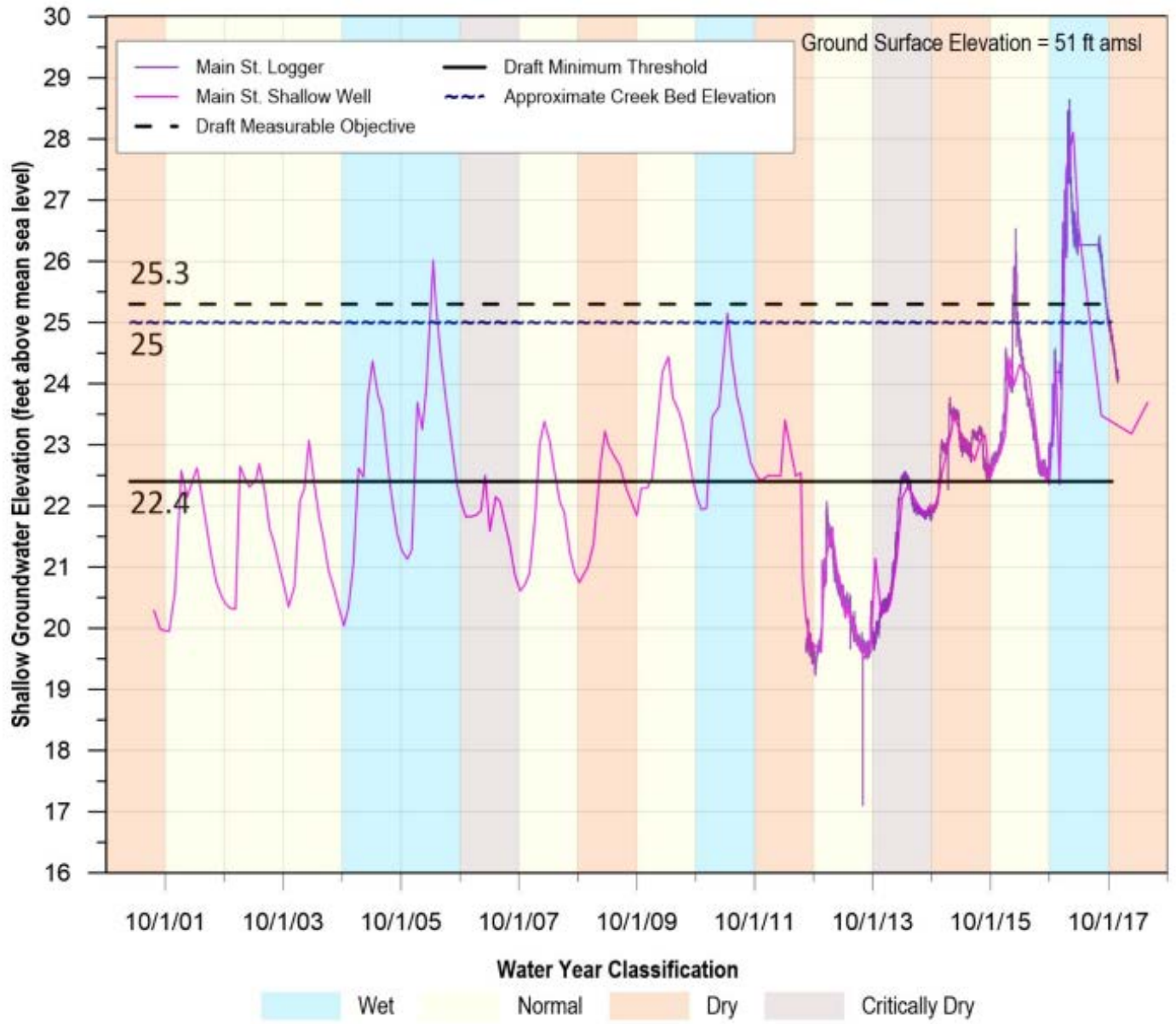
Groundwater / Surface Water Interactions







Mid-County Groundwater Level Near Creek



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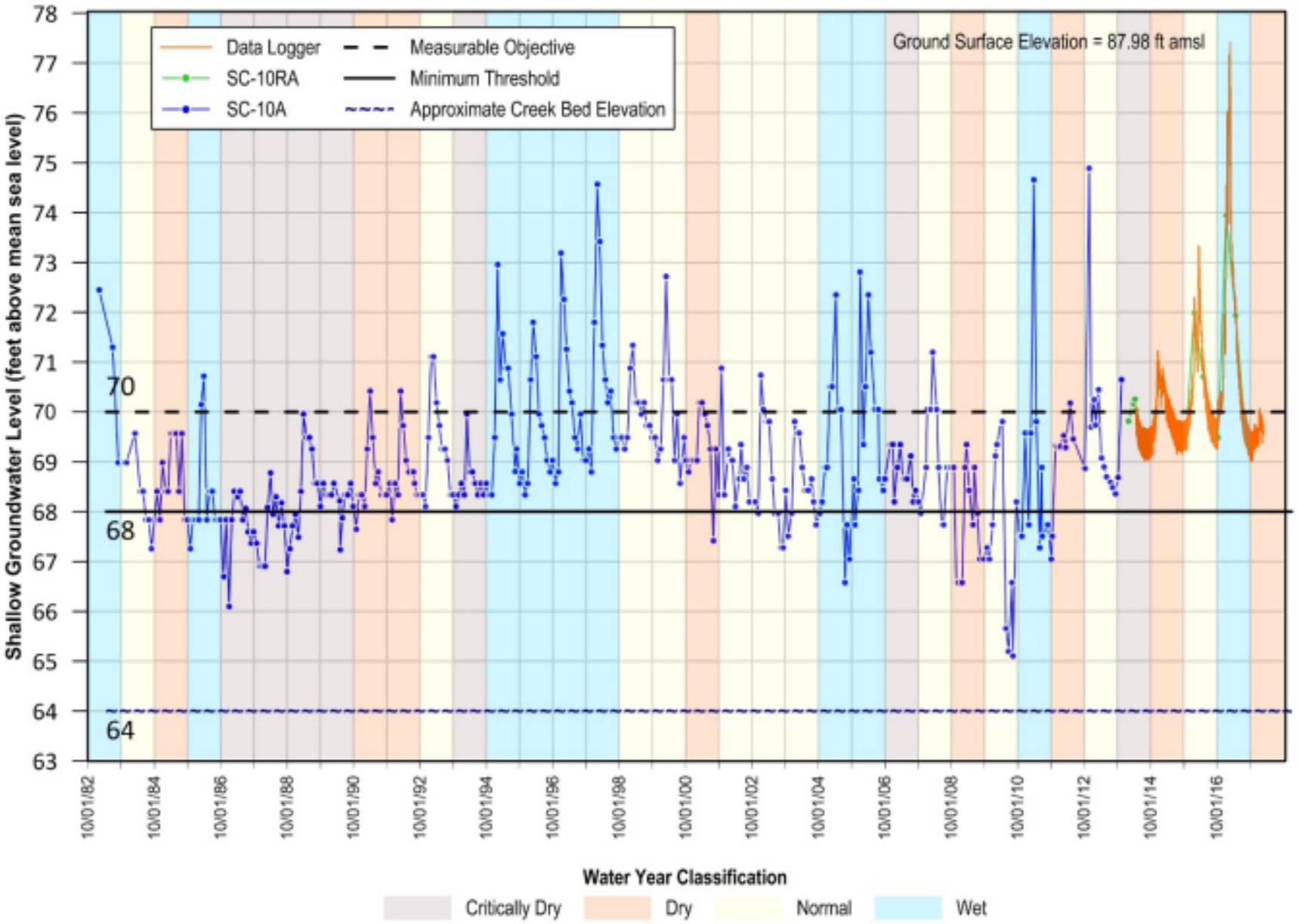
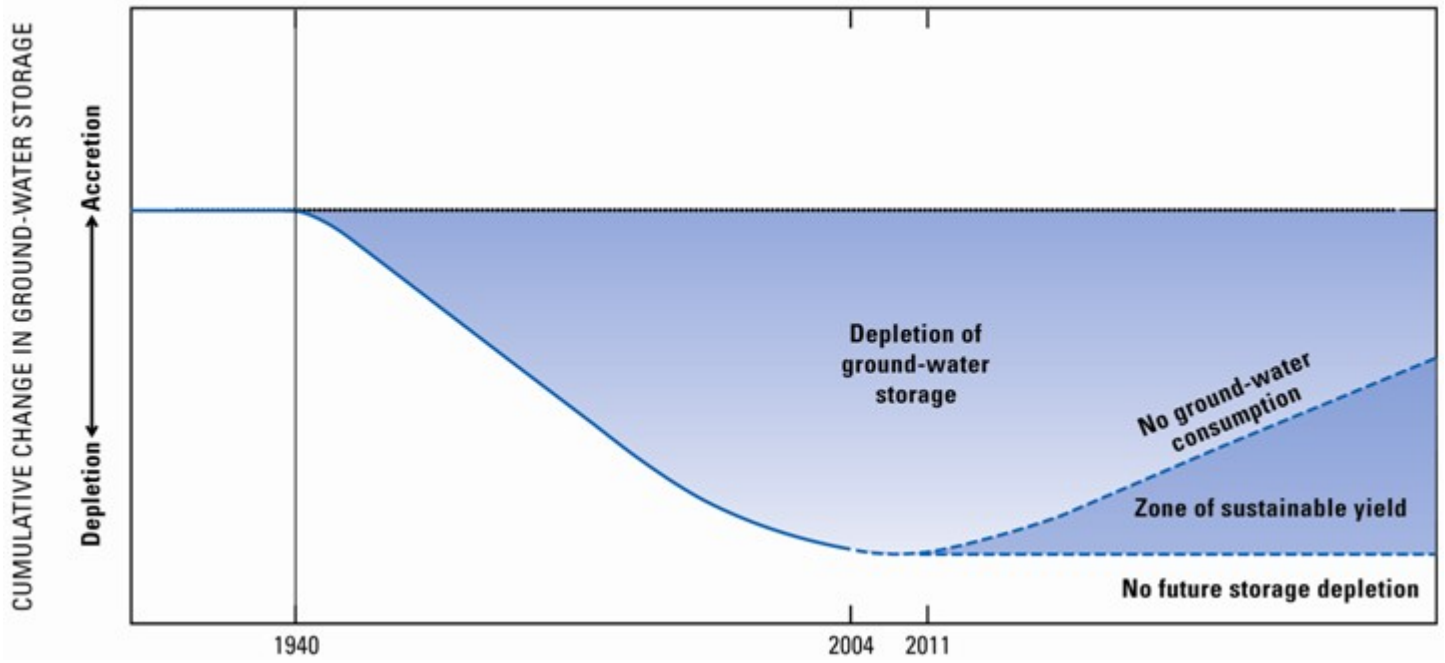
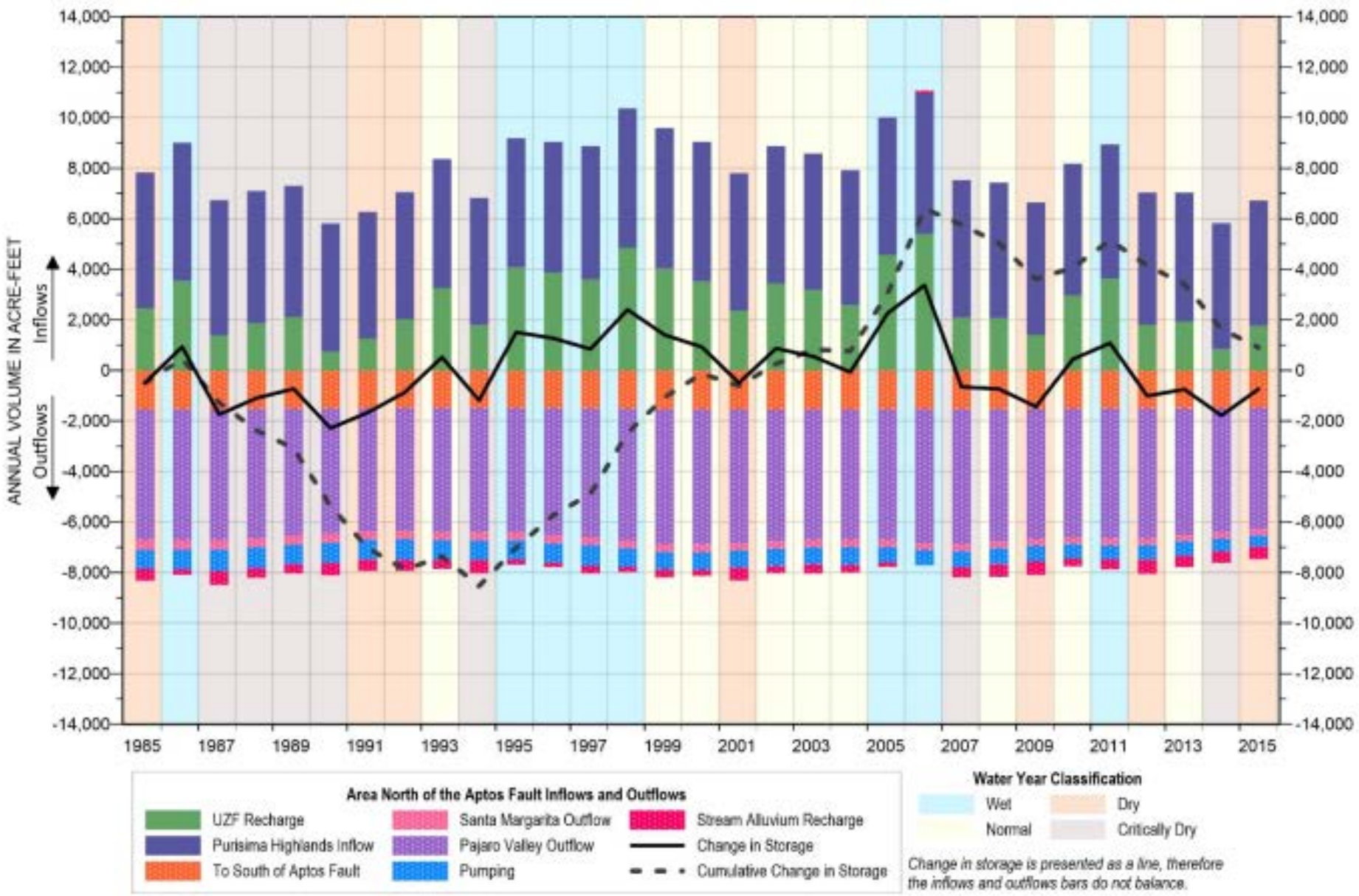


Reduction of Groundwater in Storage

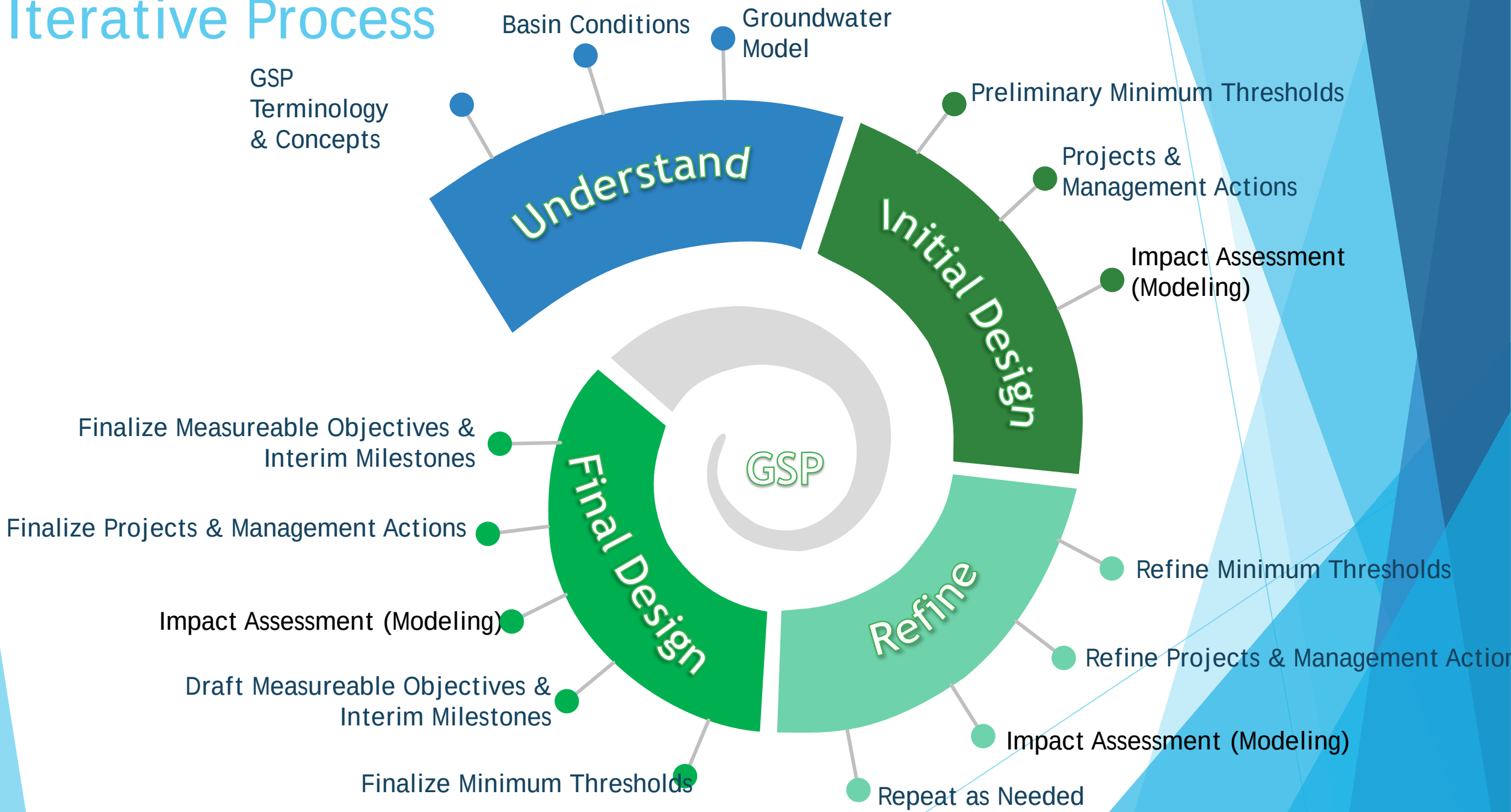
- Significant and unreasonable groundwater extractions from the basin that may lead to undesirable results
- Must be supported by the Basin sustainable yield



Mid-County Change in Storage



Iterative Process



Sustainable Management Criteria

- GSAs must consider and document the conditions at which the 6 sustainability indicators become "significant and unreasonable" in their Basin,
- These descriptions of significant and unreasonable conditions are later translated into quantitative "undesirable results".
- Significant and unreasonable conditions must be evaluated and monitored to determine "minimum thresholds"
- A "minimum threshold " is the quantitative value for a representative monitoring site that, when exceeded individually or in combination with minimum thresholds at other monitoring sites, may cause an undesirable result(s) in the basin.
- GSAs need to set minimum thresholds at representative monitoring sites for each applicable sustainability indicator **AFTER** considering the interests of beneficial uses and users.

Undesirable Results – An Iterative Approach

Technical Information (from available data and technical analyses)

+

Beneficial Use / User information (from Outreach Process)

= **Basin Conditions**

+

Qualitative Discussions (by Board about the above)

= **Decisions about significant and unreasonable conditions**

+

Technical Information (monitoring / modelling)

= **Minimum Thresholds**

+

Qualitative Discussions and Quantitative Analysis (by Board about the above)

= **Undesirable Results**