

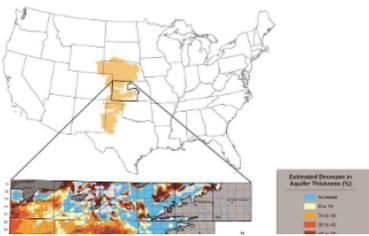
Exploiting an Underutilized Trove of Agrohydrology Information: Interpretation of Hydrographs from Aquifers Supporting Irrigated Agriculture

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The High Plains Aquifer



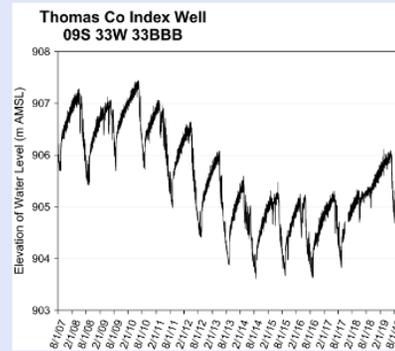
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Kansas HPA Index Well Program



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Thomas County Index Well



Key features from hydrograph:

- seasonally pumped unconfined aquifer;
- depth to water likely large;
- levels rise until the next pumping season;
- small yearly changes in average to wet years;
- sizable yearly decreases in dry years;
- irrigation schedule from pumping history;
- no indication of episodic recharge;
- near-constant and relatively large net inflow;
- aquifer response to meteorological extremes;
- significant impact of large pumping reductions.

Overall conclusion: Although the HPA in this area has undergone relatively large water-level declines, the hydrograph indicates that modest

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Liberal 436 Index Well



Key features from hydrograph:

- seasonally pumped confined aquifer;
- water levels stabilize each recovery season;
- recovery often faster than duration of pumping;
- decreases in water level every year;
- larger decreases in dry years;
- irrigation schedule from pumping history;
- no indication of episodic recharge;
- aquifer interval appears laterally isolated;
- large reductions will not stop declines.

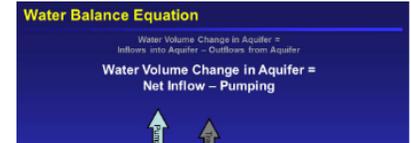
Overall conclusion: Although the HPA in this area has undergone relatively small declines, the hydrograph indicates that there is little potential for stabilizing water levels. Pumping reductions will

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Insights for Agrohydrology

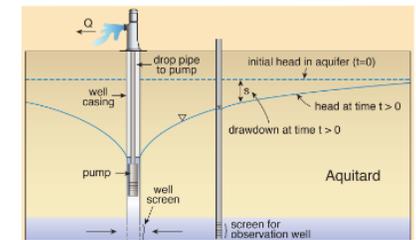
Kansas HPA hydrographs reveal:

1. Temporal variations in net inflow are small
 - magnitude estimated from field data
 - see Butler et al. (2016, 2018);
 - net inflow tightly linked to pumping reductions.



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Final Comments



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