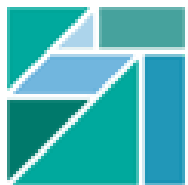


Available water supply from deep aquifers: Model simulations

Daniel Abrams

May 27, 2014



**ILLINOIS STATE
WATER SURVEY**

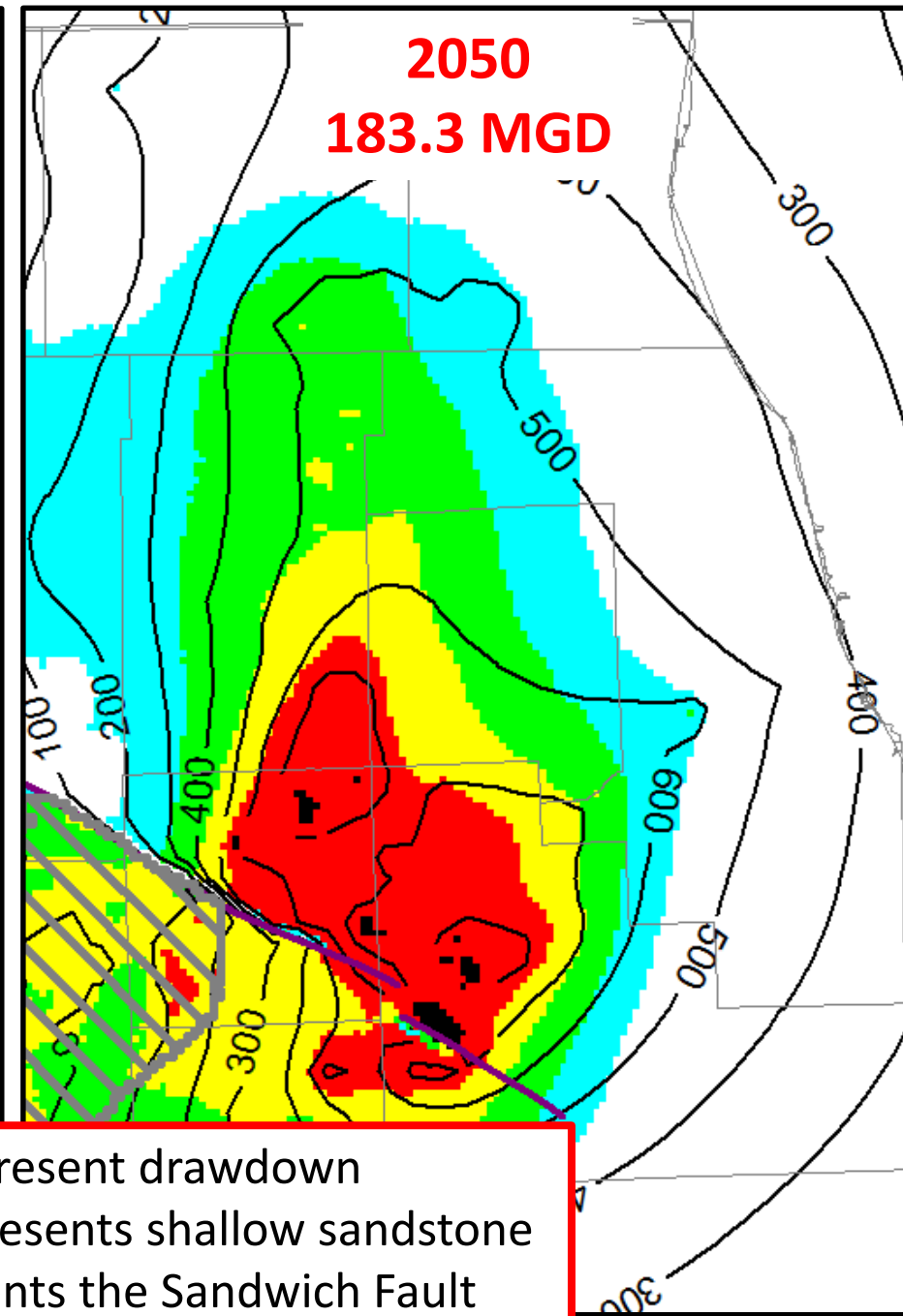
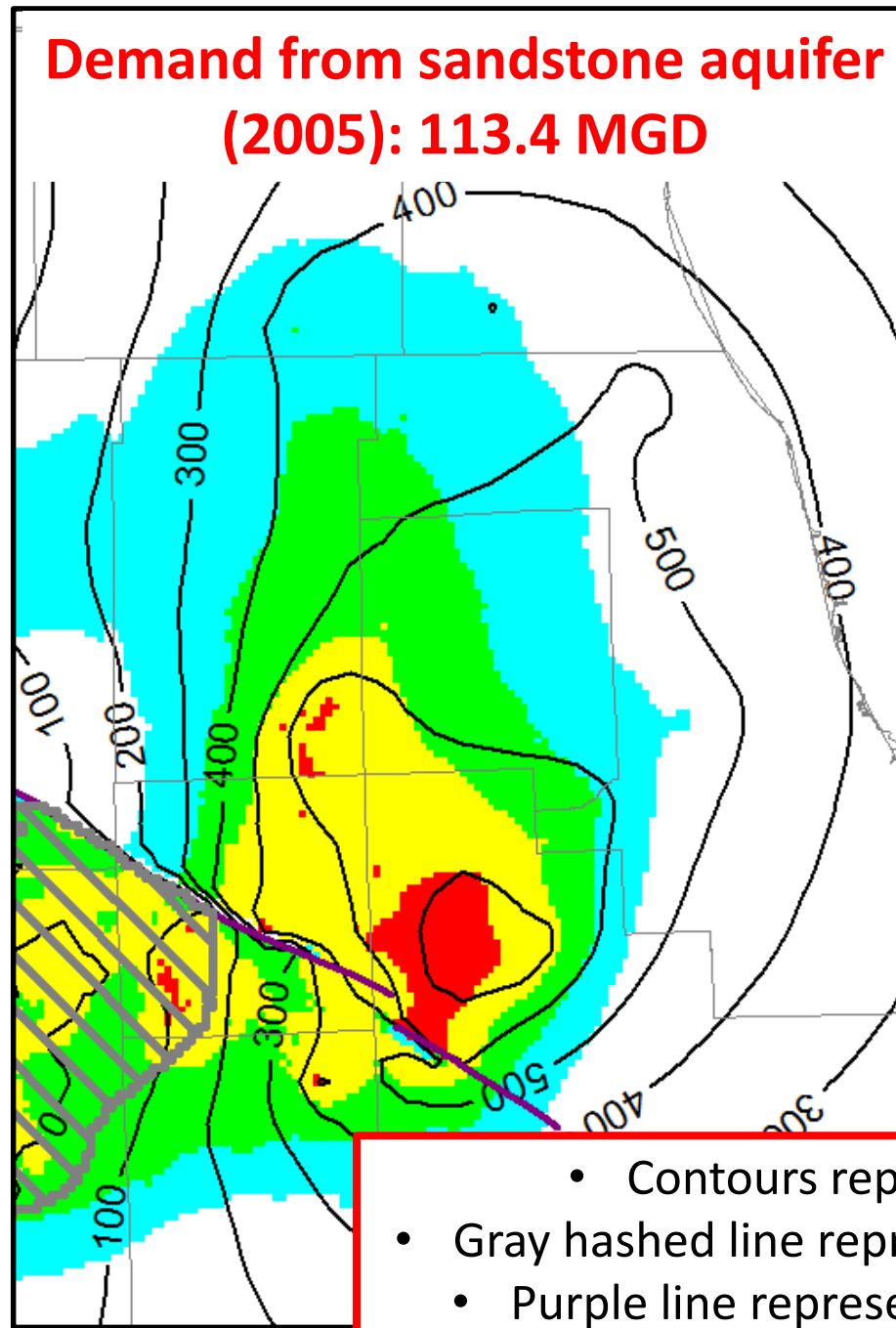
PRAIRIE RESEARCH INSTITUTE

Brief Recap

- 1) Water demands in Kendall County are greatest from the sandstone aquifers, especially where the sandstone is deep (Yorkville, Oswego)
- 2) Deep sandstone aquifers are recharged more slowly than shallow aquifers
- 3) Future water demands are expected to increase more rapidly in Kendall County than the rest of Northeastern Illinois
- 4) Desaturation of the uppermost deep sandstone aquifer, the Ancell Unit, may negatively impact water quality and water quantity
- 5) Desaturation of the Ancell has been observed in the field and in our groundwater flow models

Baseline Scenario

Head above Ancell

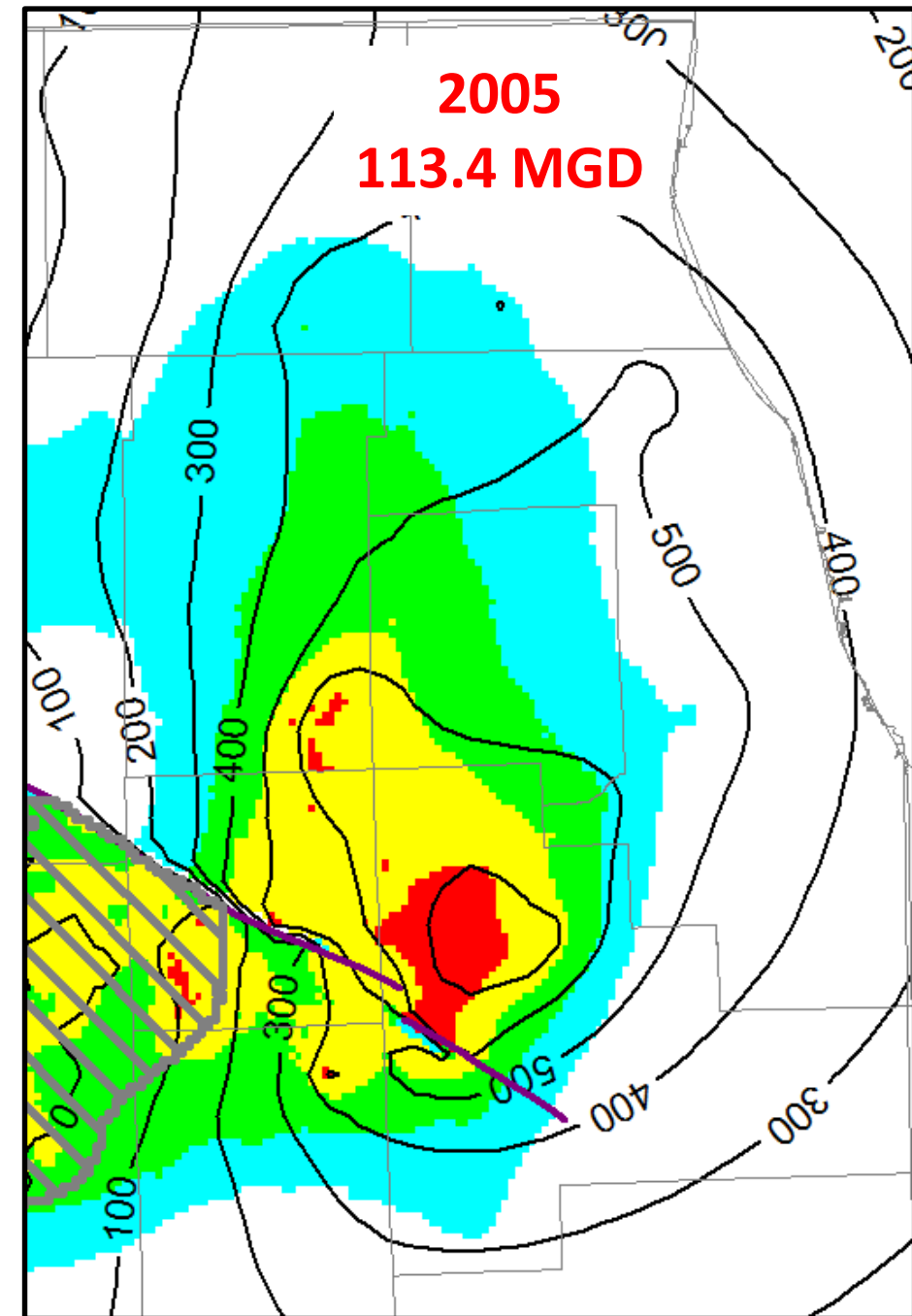


- Contours represent drawdown
- Gray hashed line represents shallow sandstone
- Purple line represents the Sandwich Fault

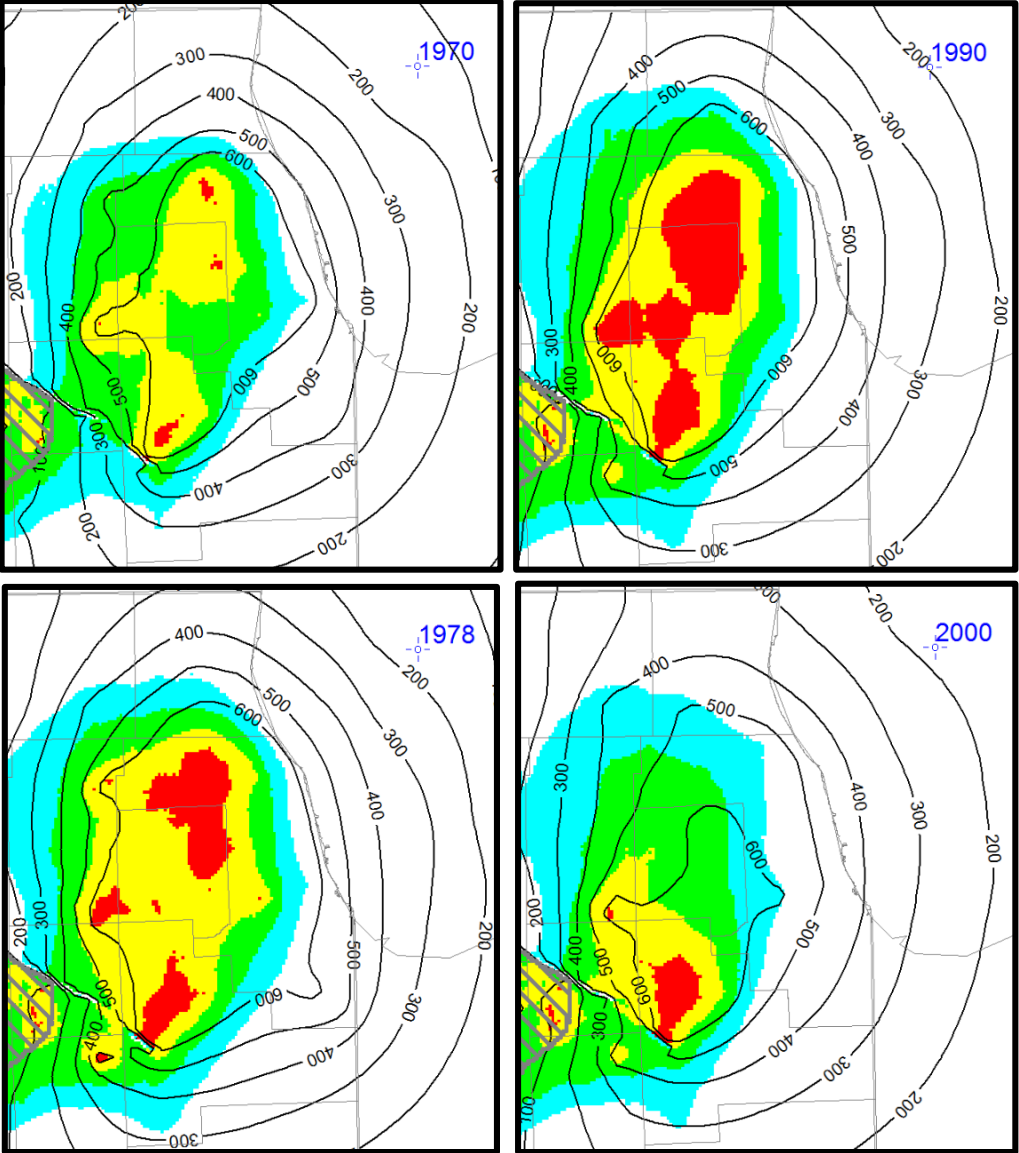
Available water supply in the sandstone aquifer

- **How much pumping can occur while still leaving the Ancell fully saturated?**
- Complete saturation of the Ancell will require a reduction in groundwater withdrawals for some facilities (either via conservation or switching to surface water).

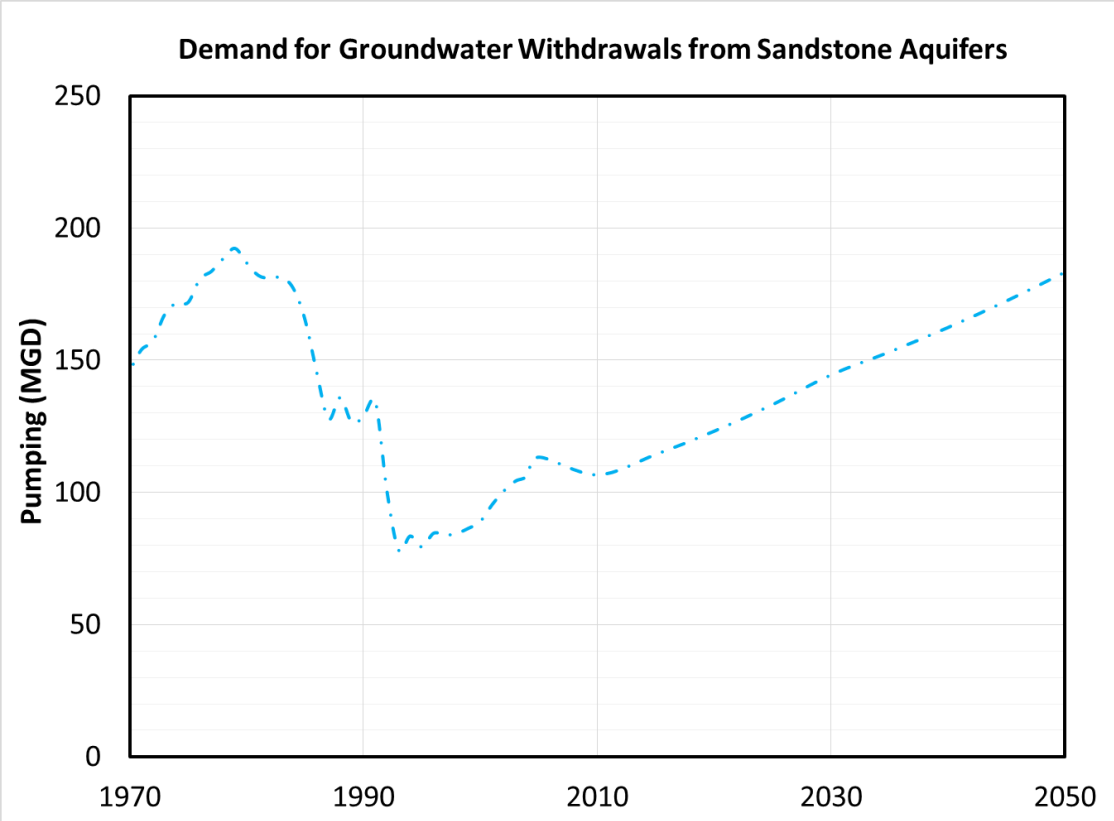
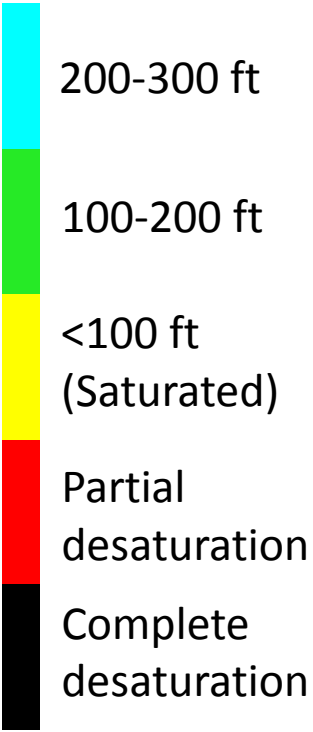
Head above Ancell



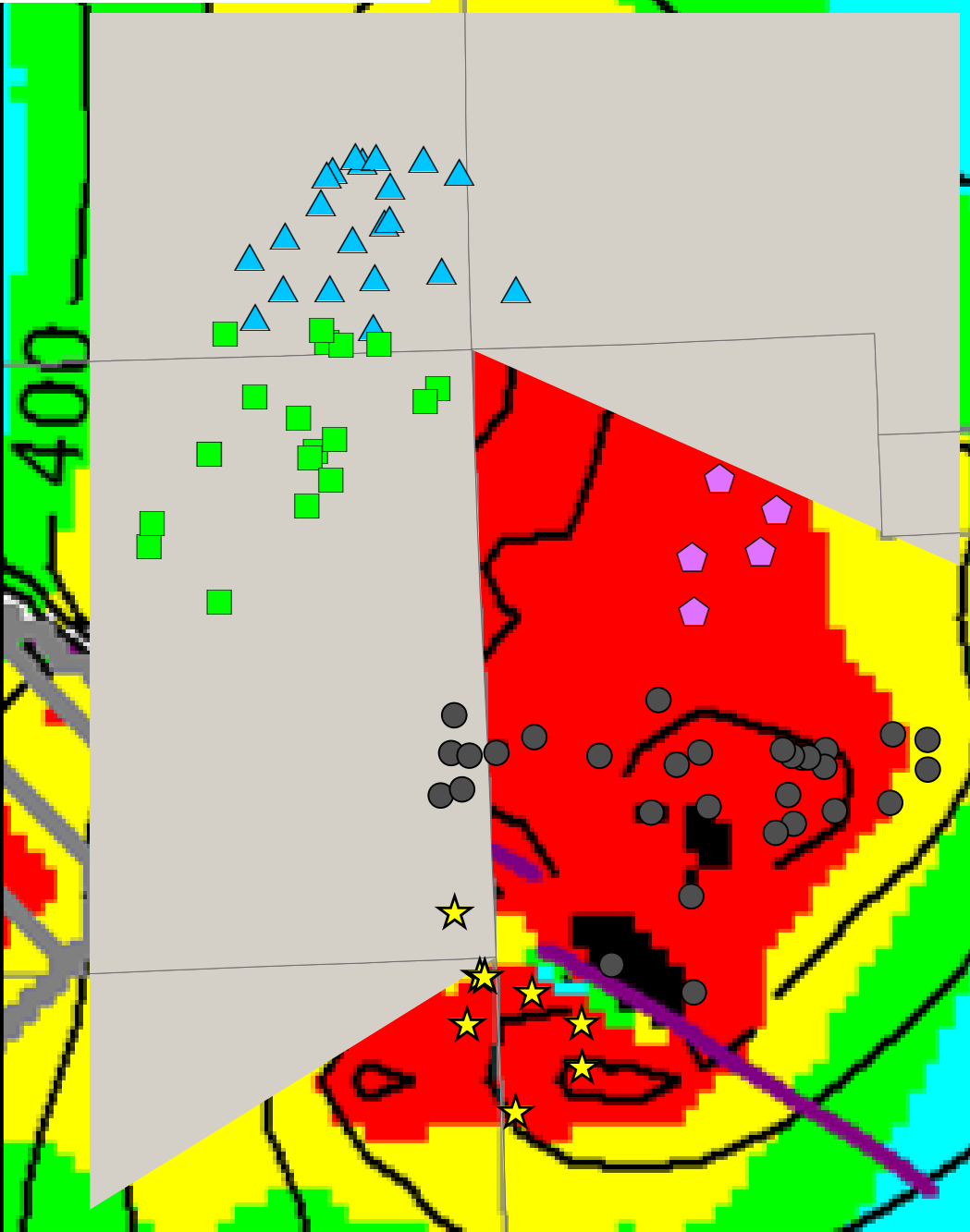
Available head through time



Head above Ancell

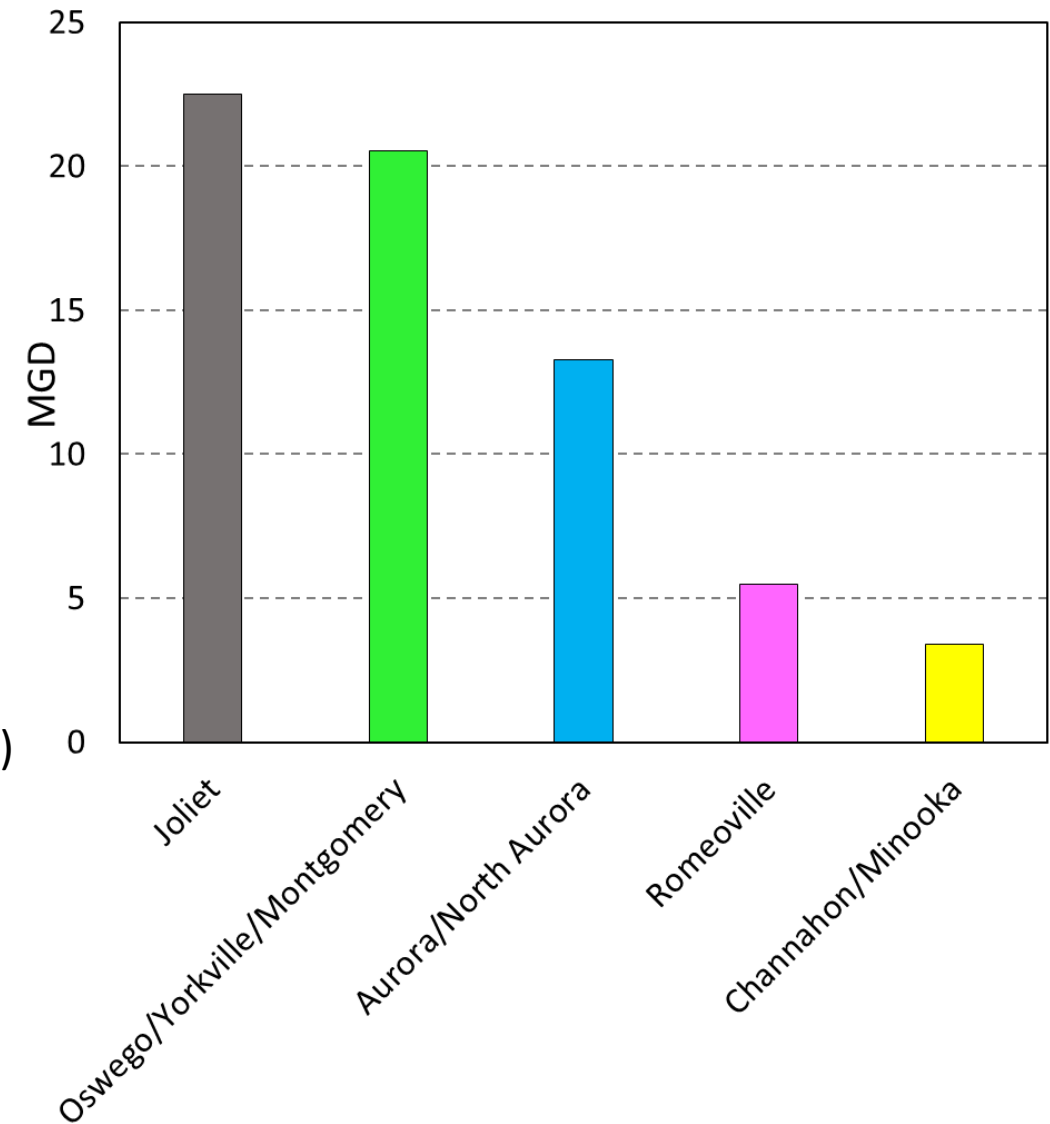


2050 Baseline

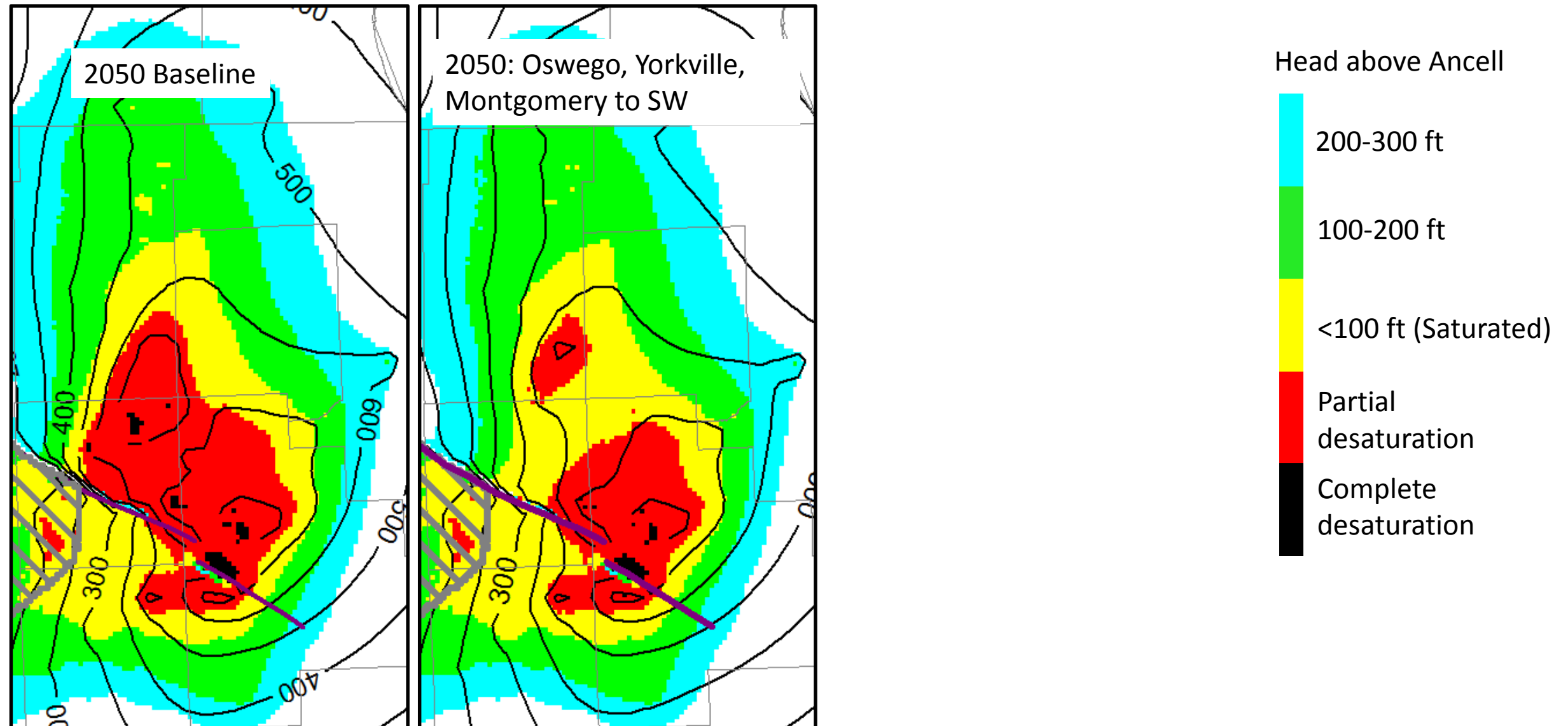


What if public water supplies in Kane/Will/Kendall Counties switched to surface water?

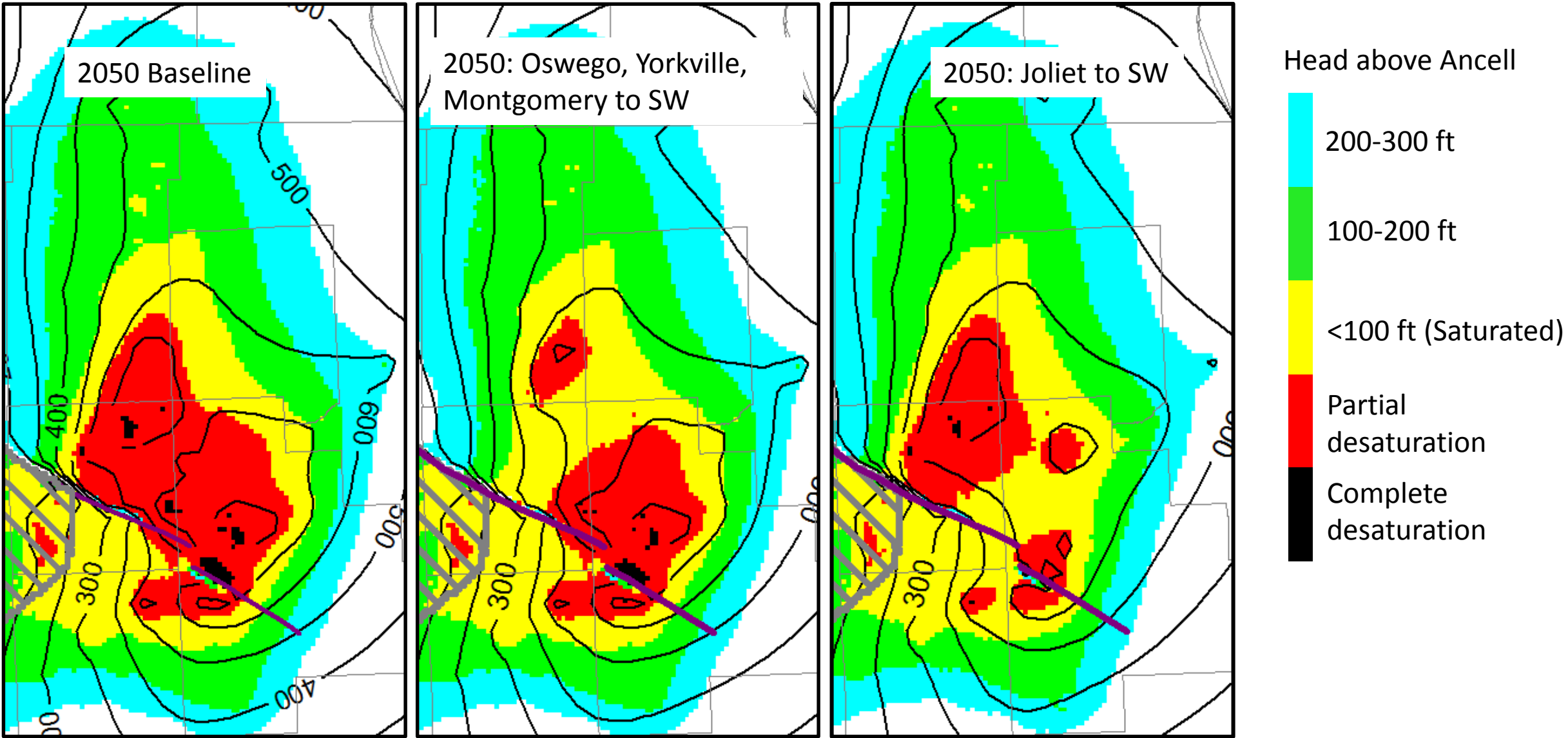
2050 Projected Groundwater Withdrawals



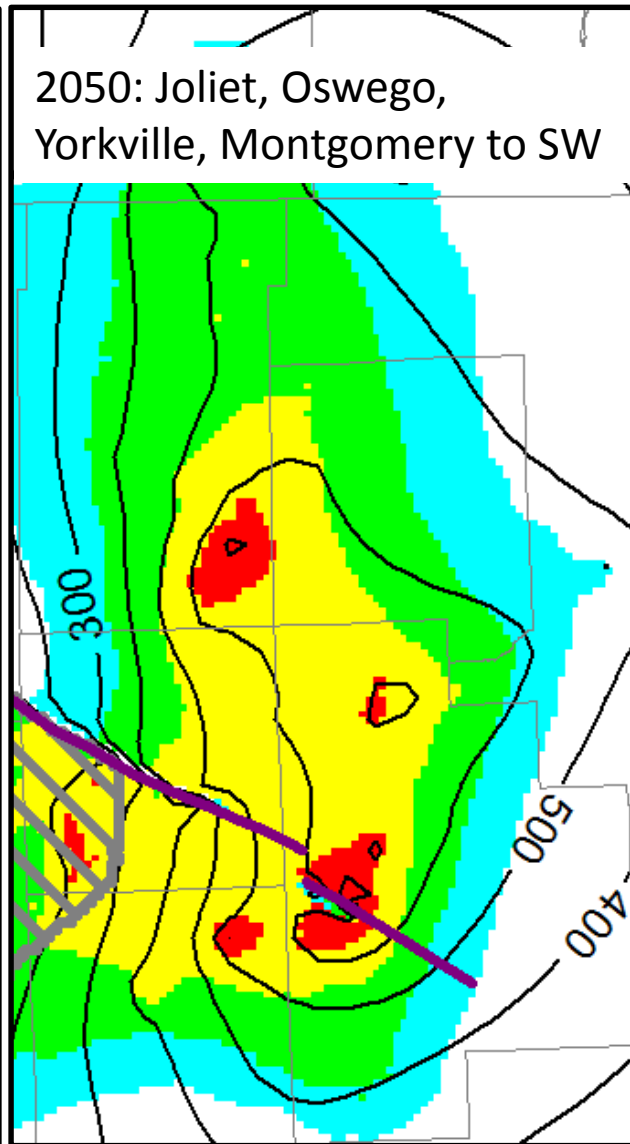
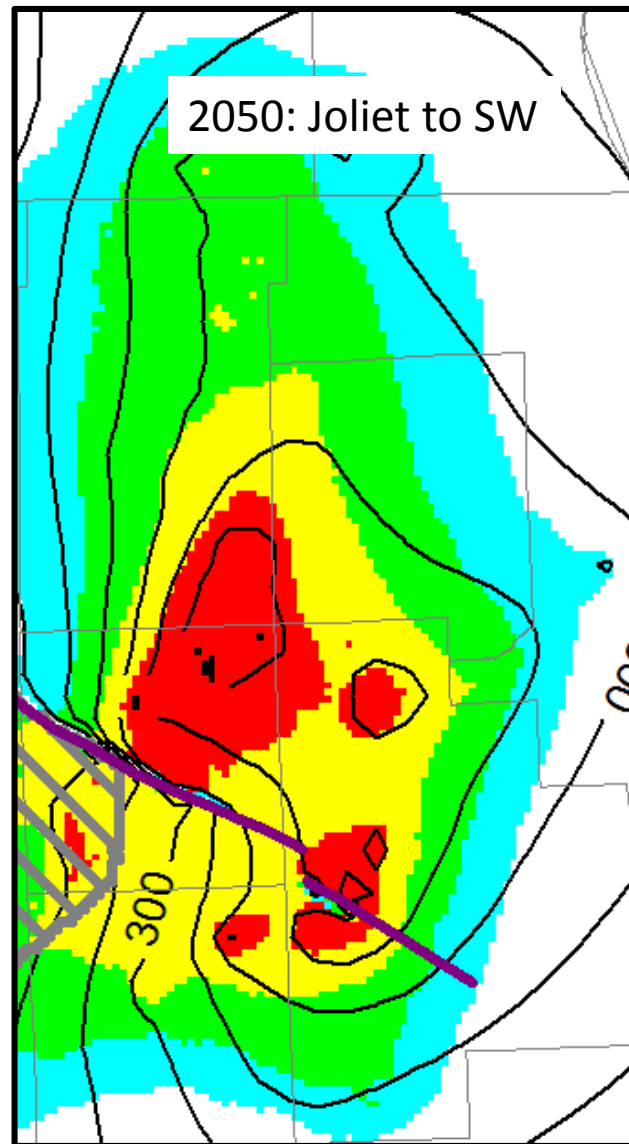
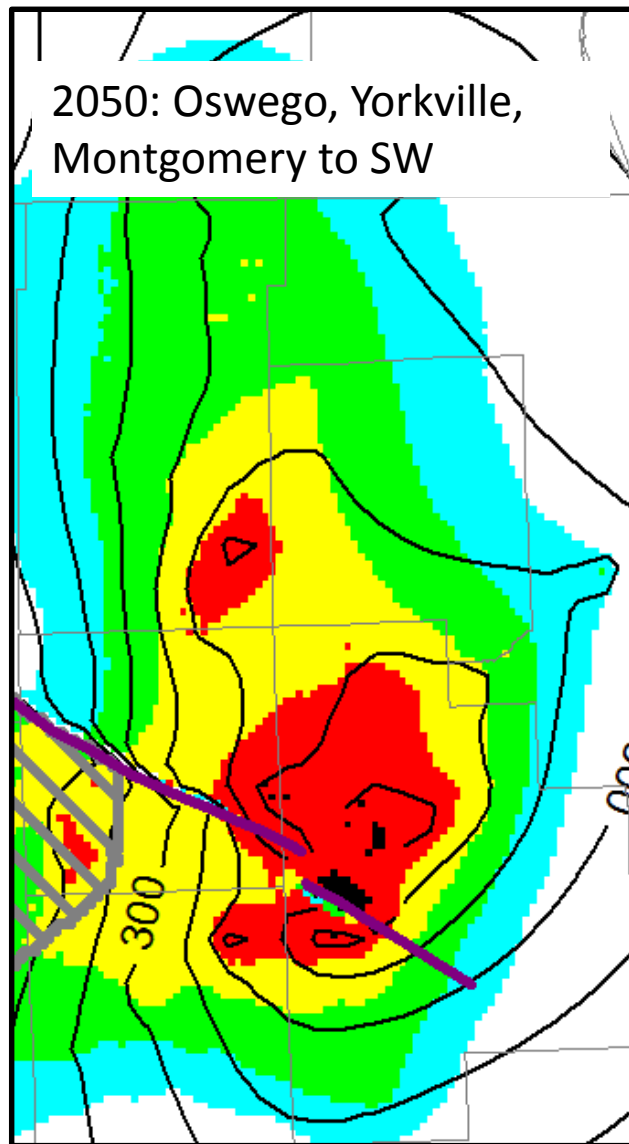
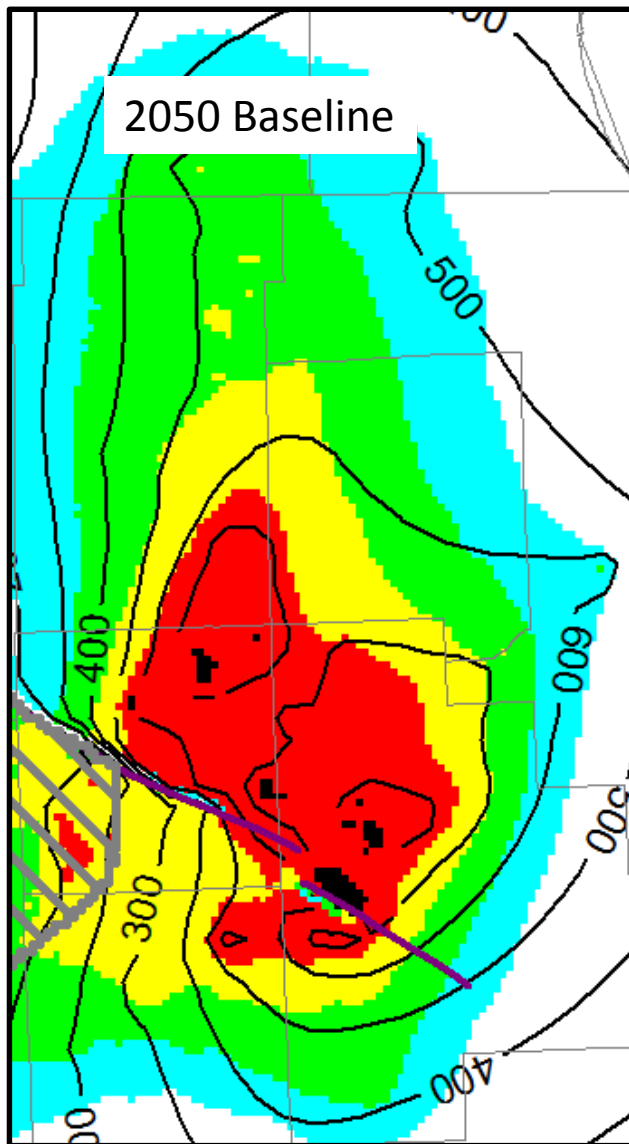
Impact of switching from groundwater to surface water (SW)



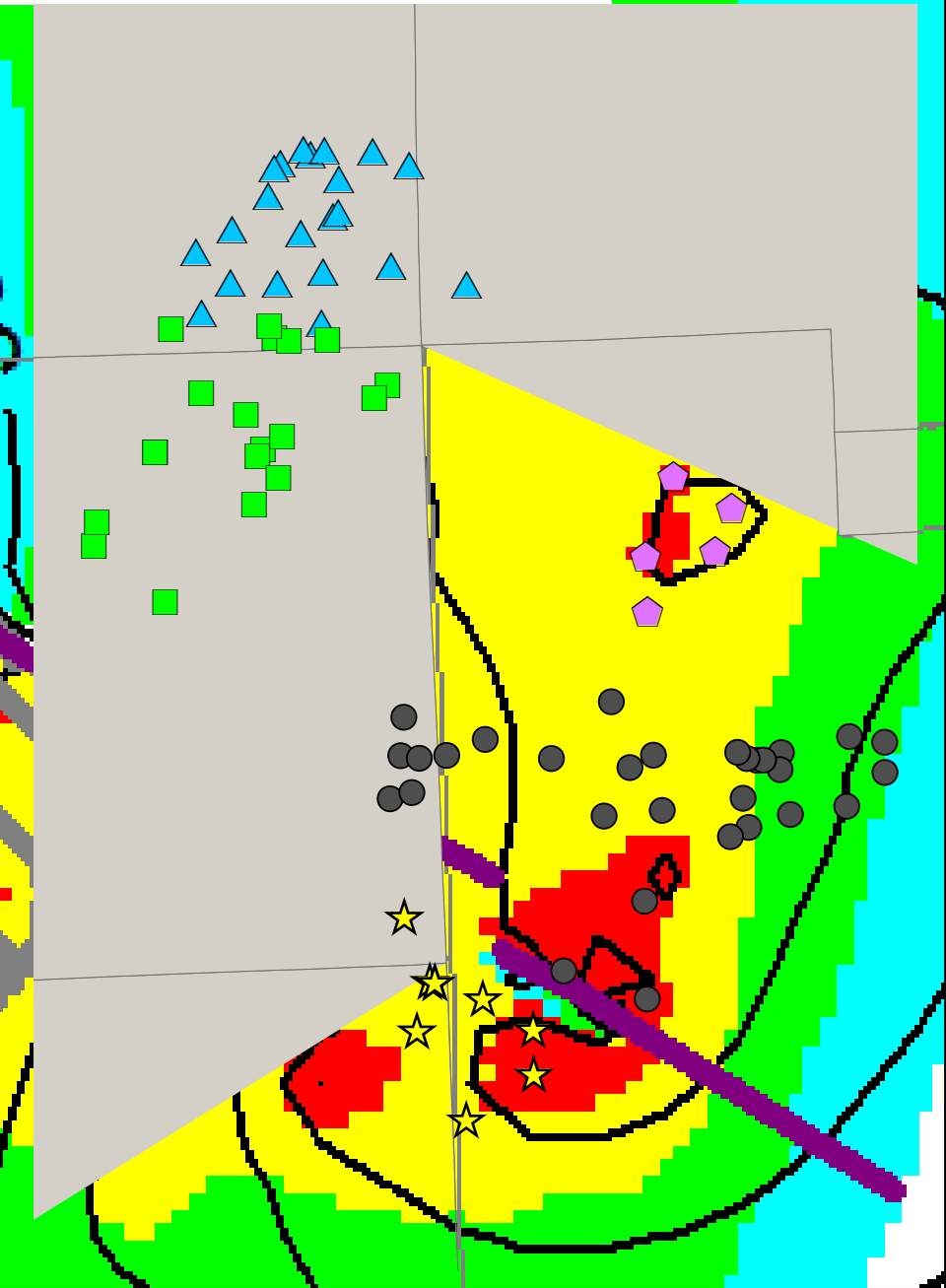
Impact of switching from groundwater to surface water (SW)



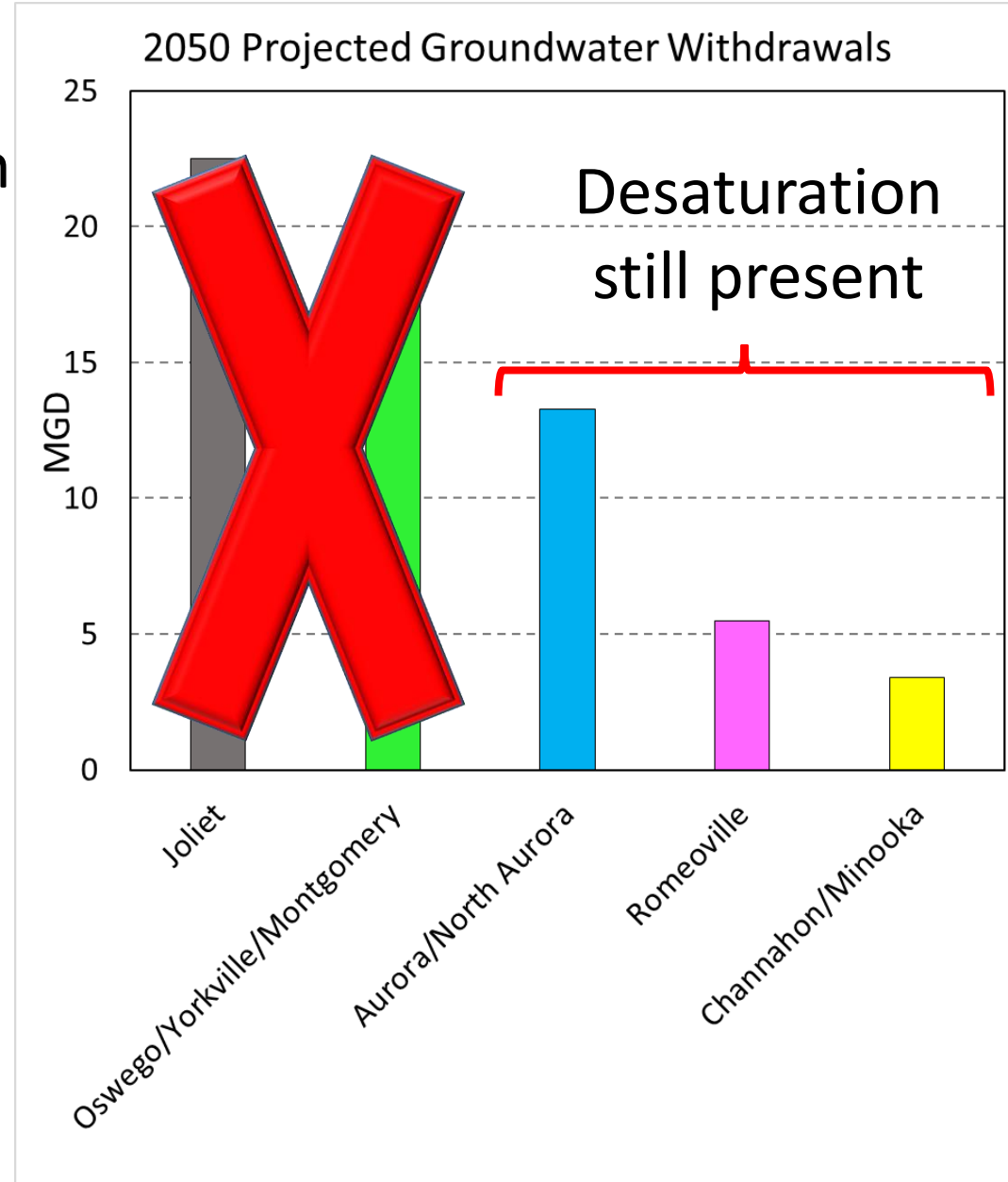
Impact of switching from groundwater to surface water (SW)

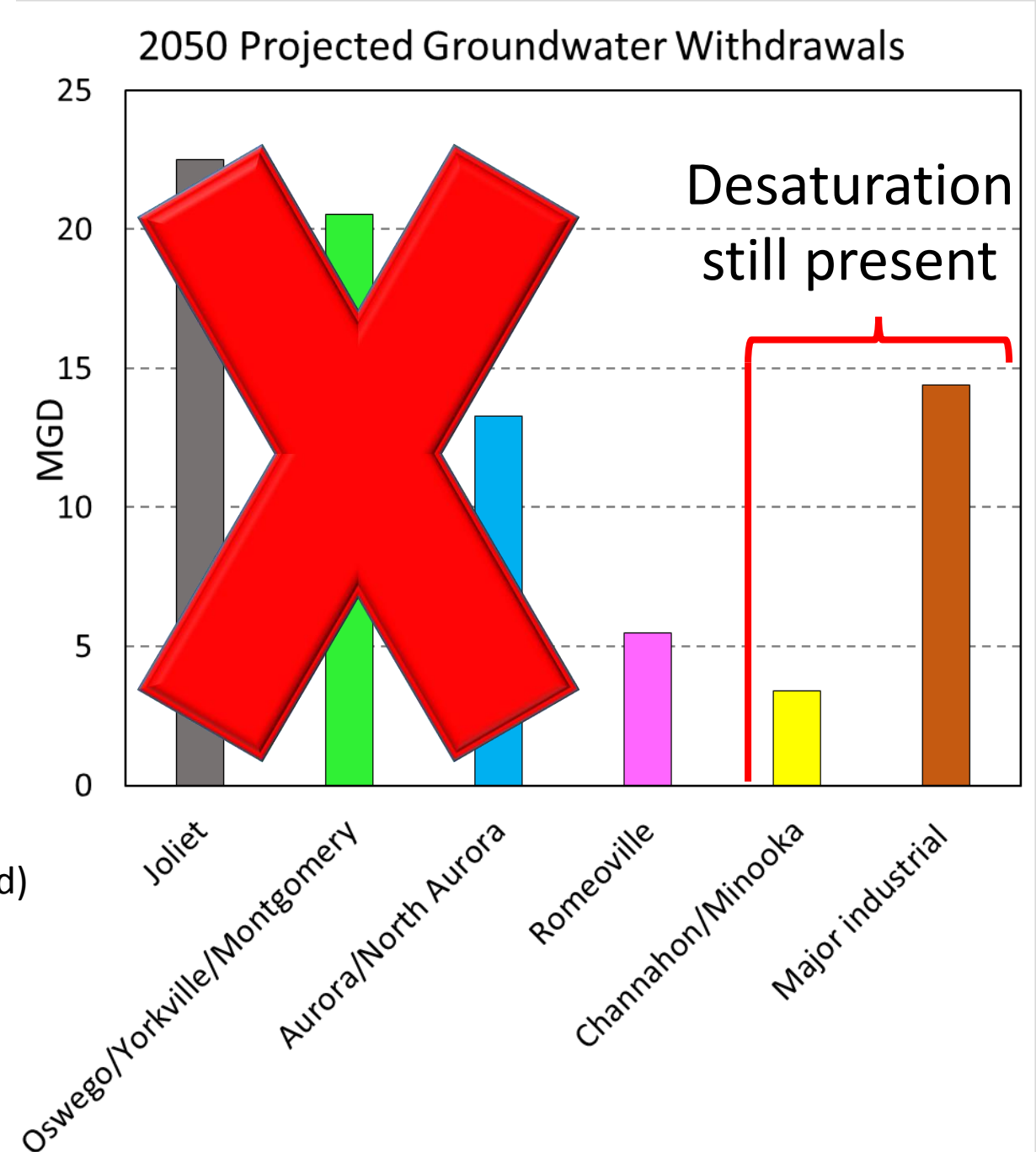
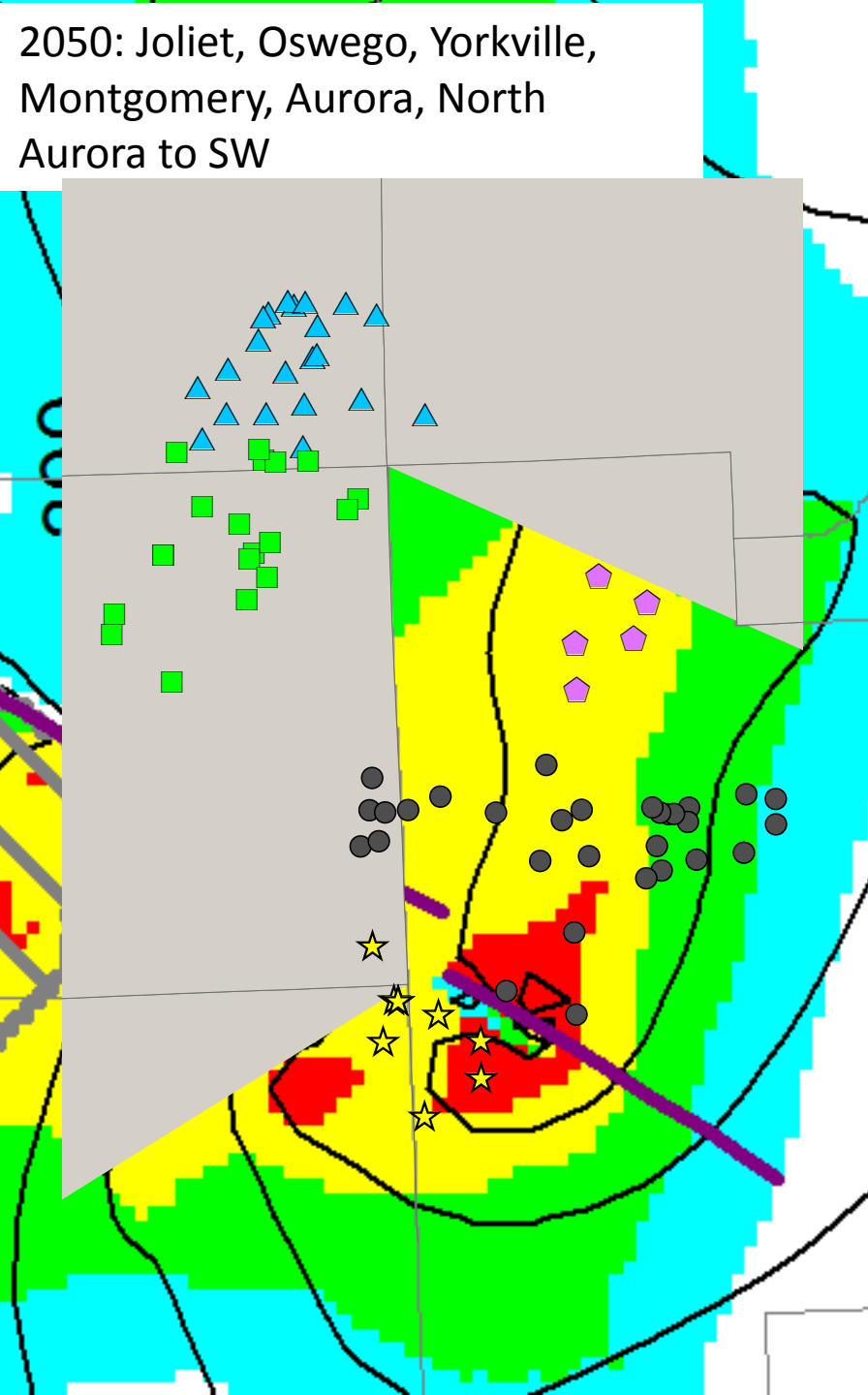


2050: Joliet, Oswego,
Yorkville, Montgomery to SW



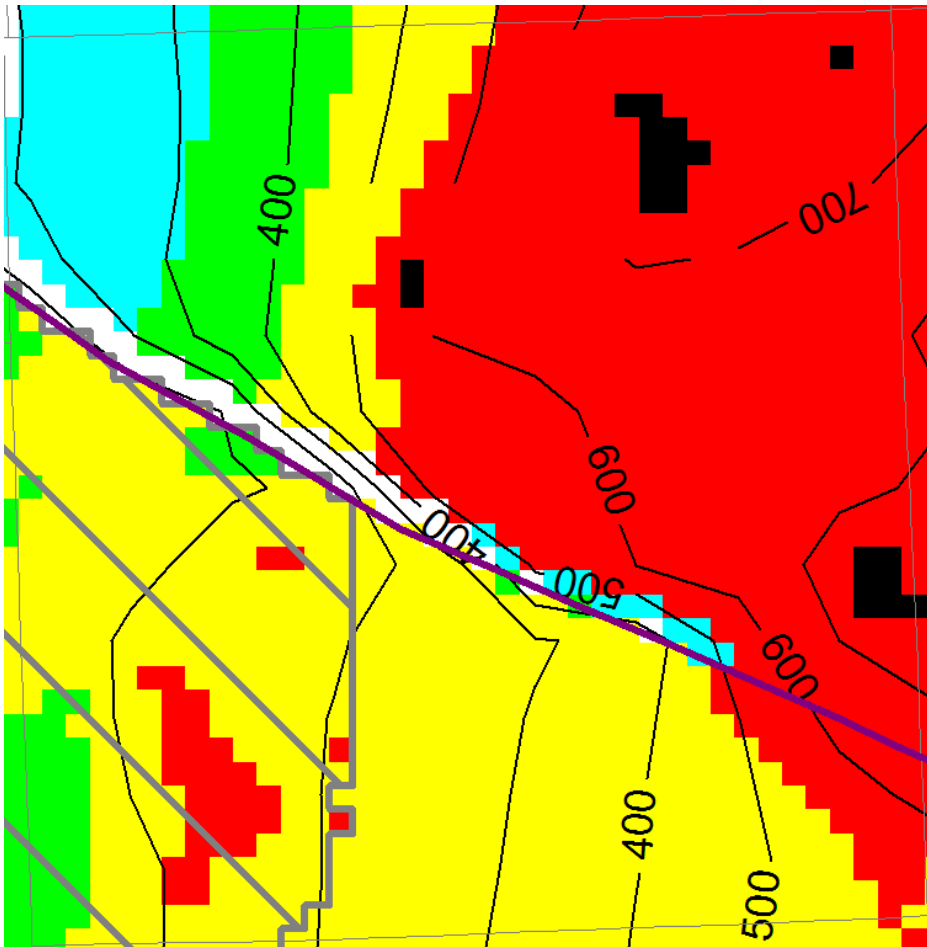
At what point is switching from groundwater to surface water an economically viable option?



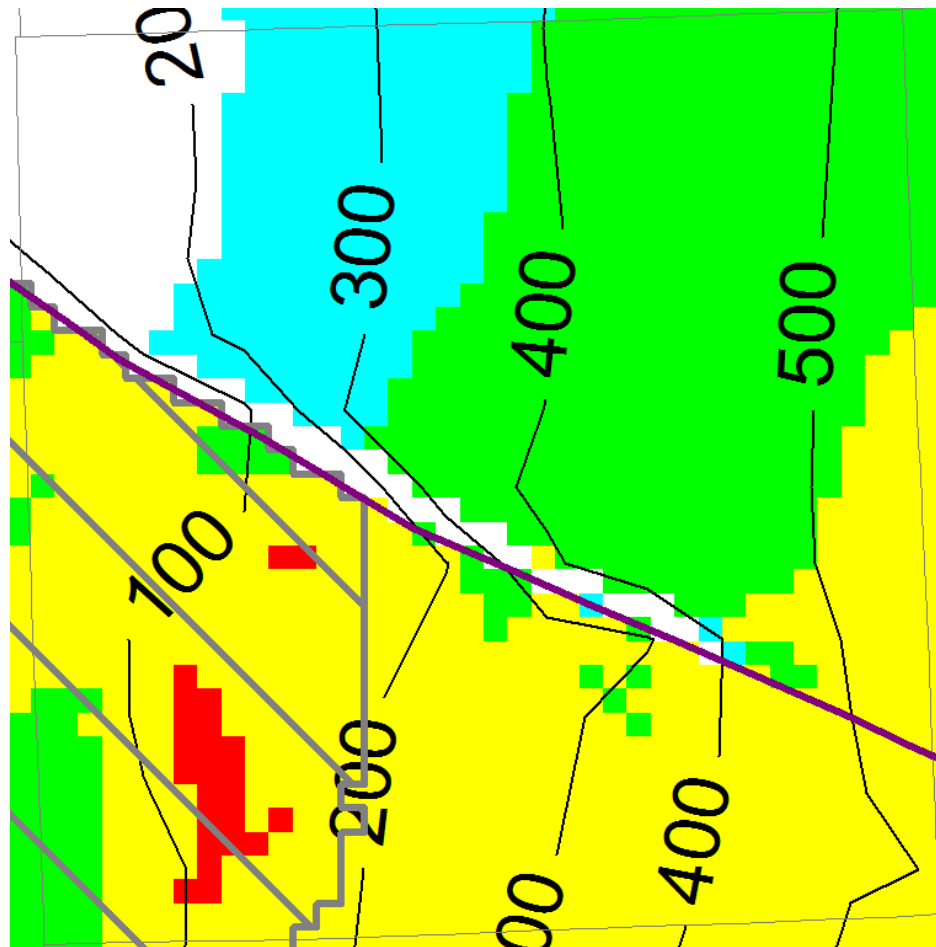


Kendall County

2050: Baseline Pumping



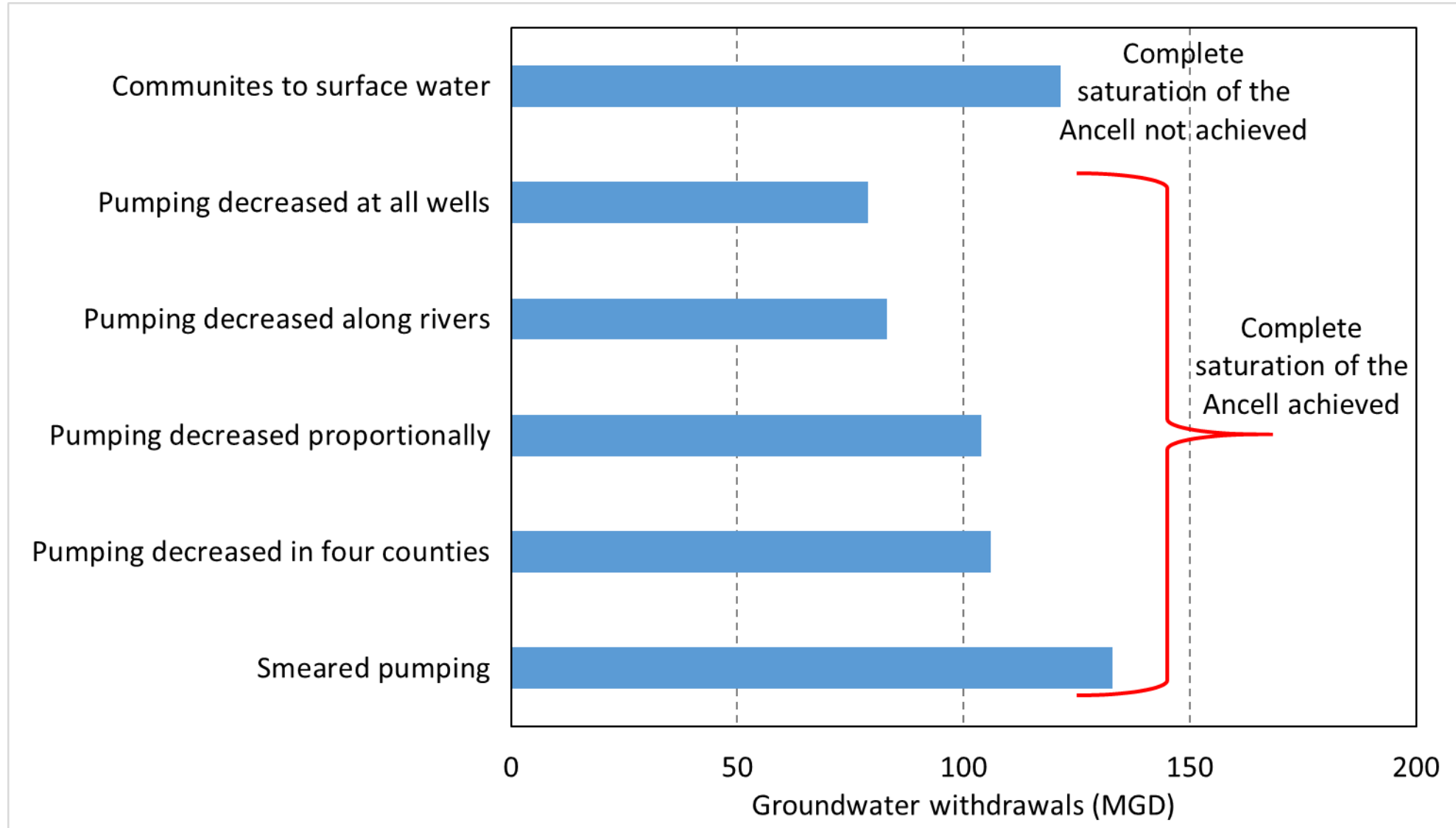
2050: Joliet, Oswego, Yorkville,
Montgomery, Aurora, North Aurora to SW



Head above Ancell



Multiple scenarios



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