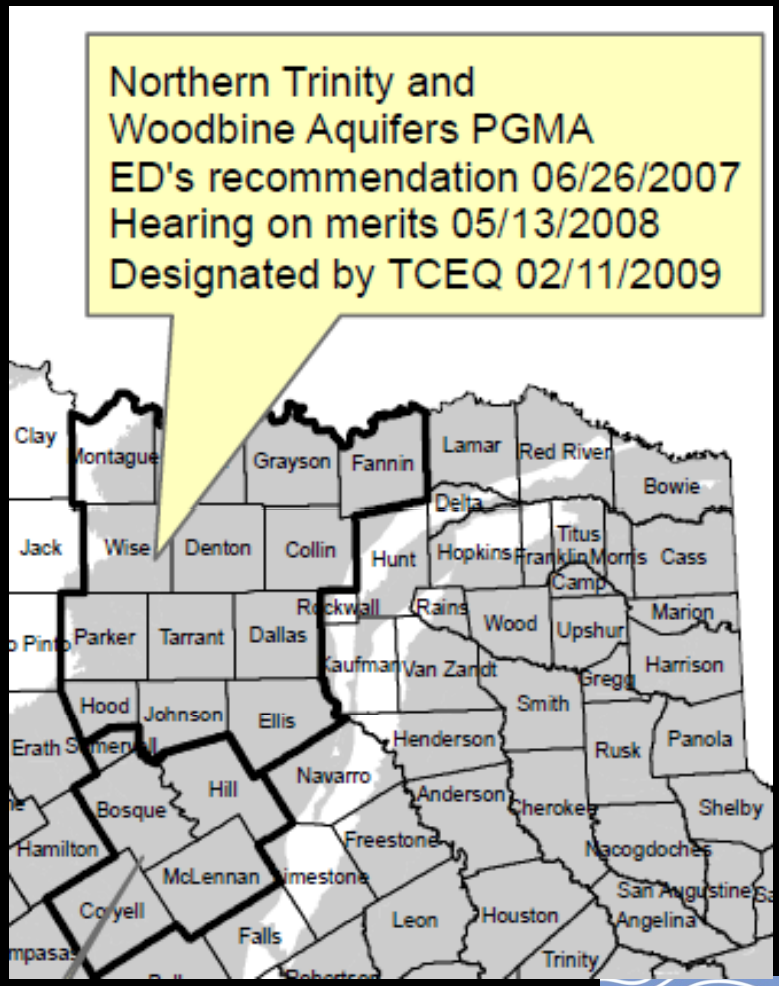
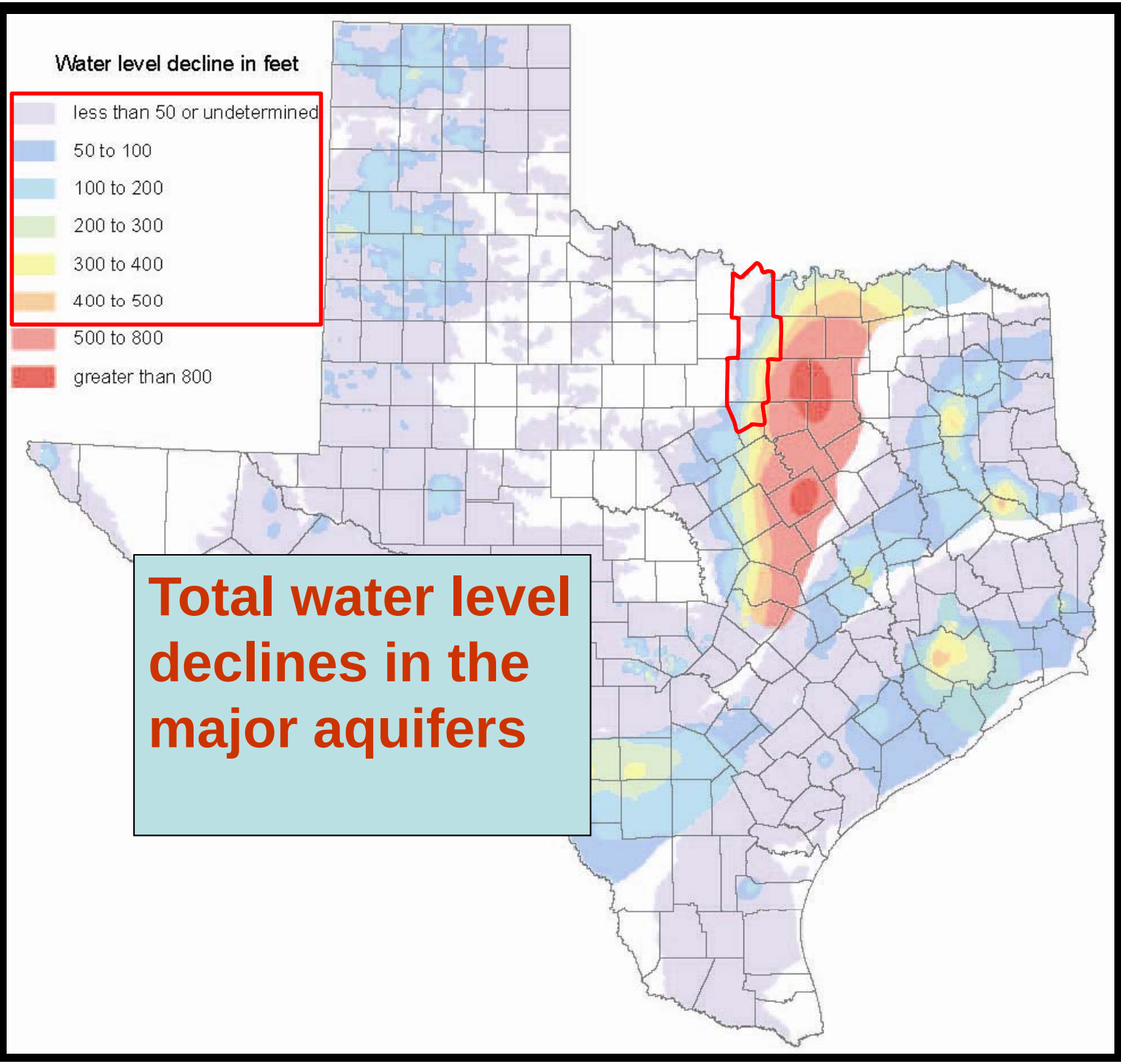
Background

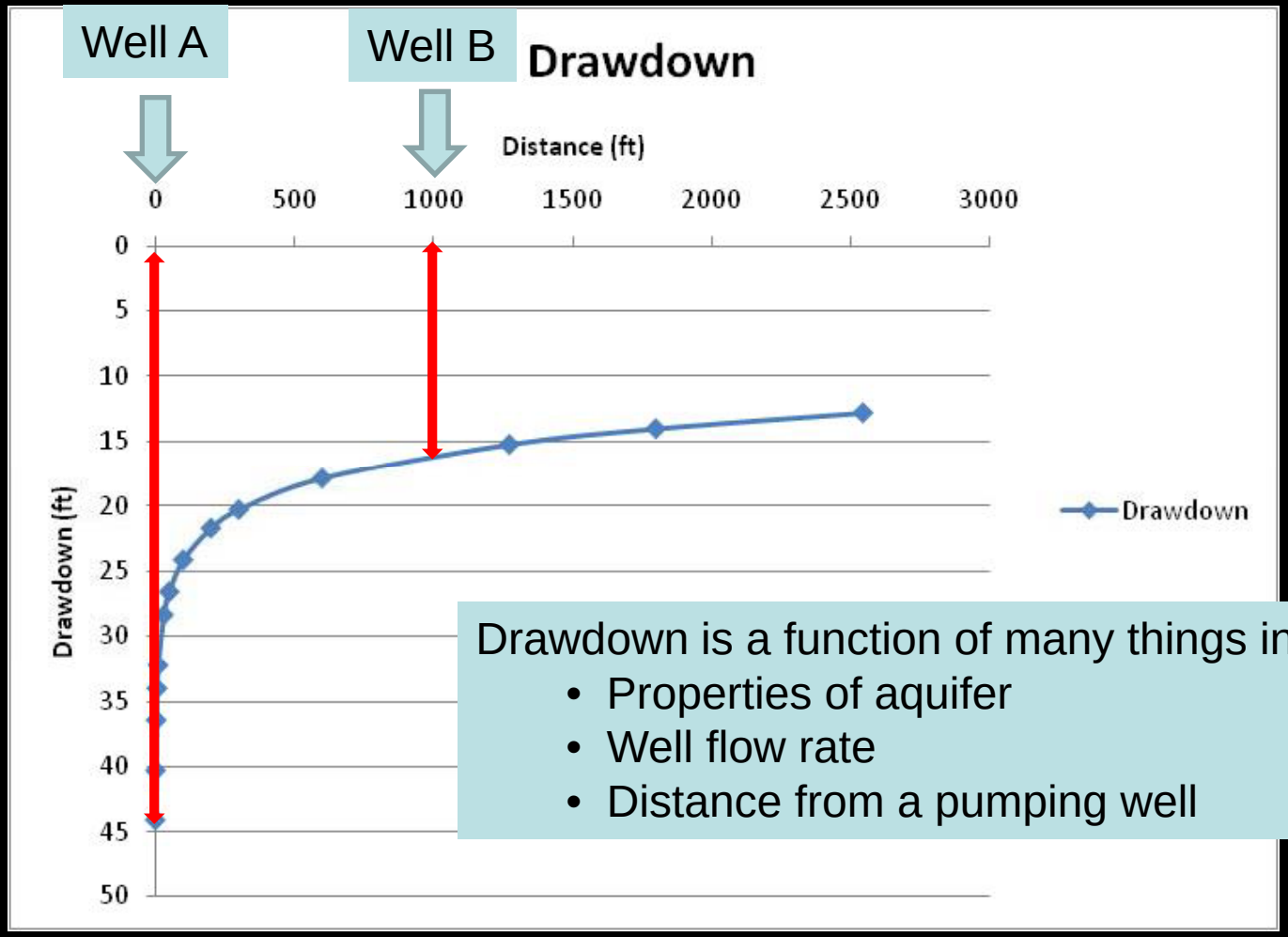
- A Priority Groundwater Management Area (PGMA) “is an area designated by TCEQ that is experiencing, or is expected to experience, within 25 years, critical groundwater problems…”.





Total water level declines in the major aquifers

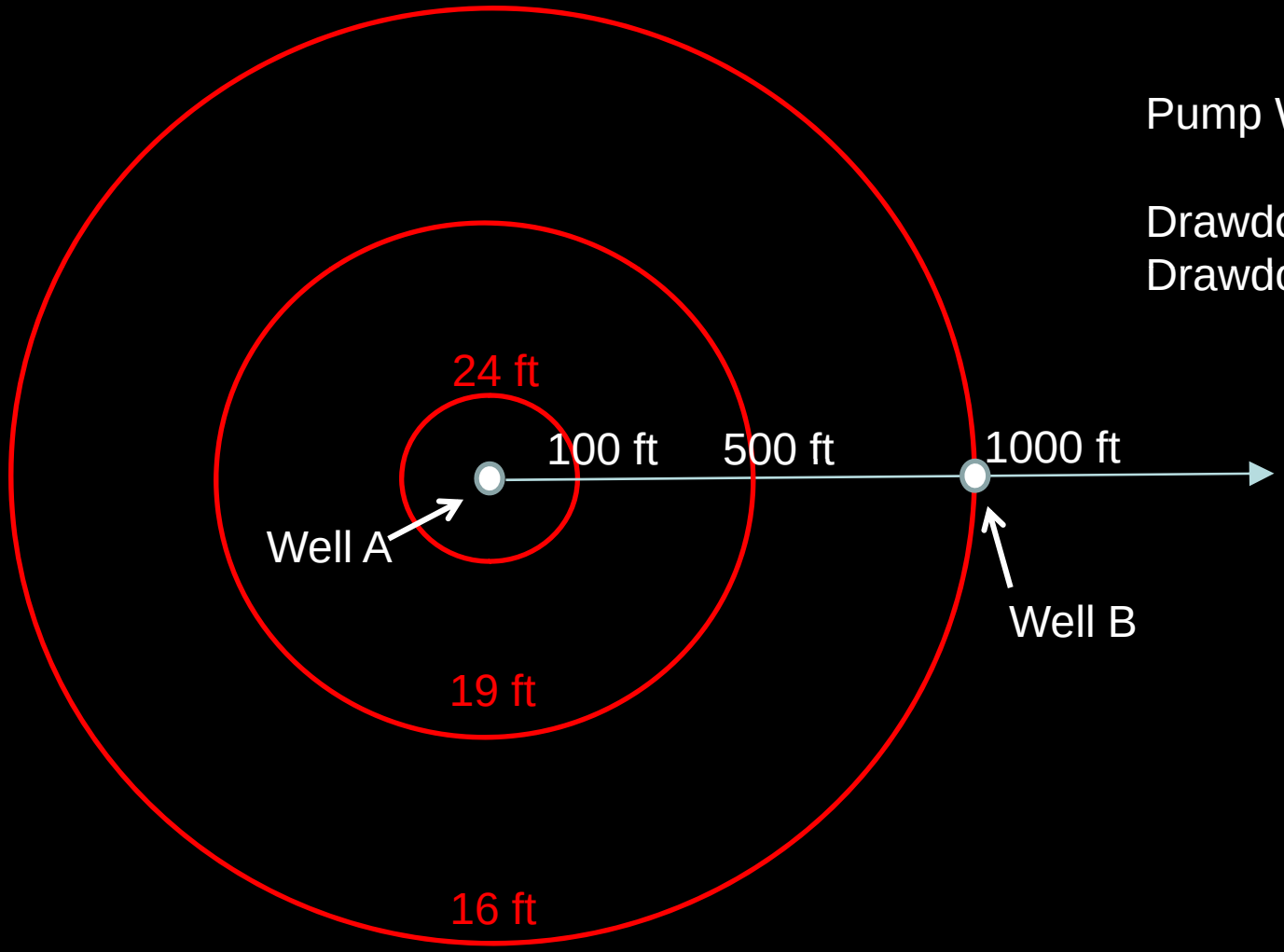
Drawdown at a Well



Drawdown is a function of many things including:

- Properties of aquifer
- Well flow rate
- Distance from a pumping well

Impacts to Nearby Wells

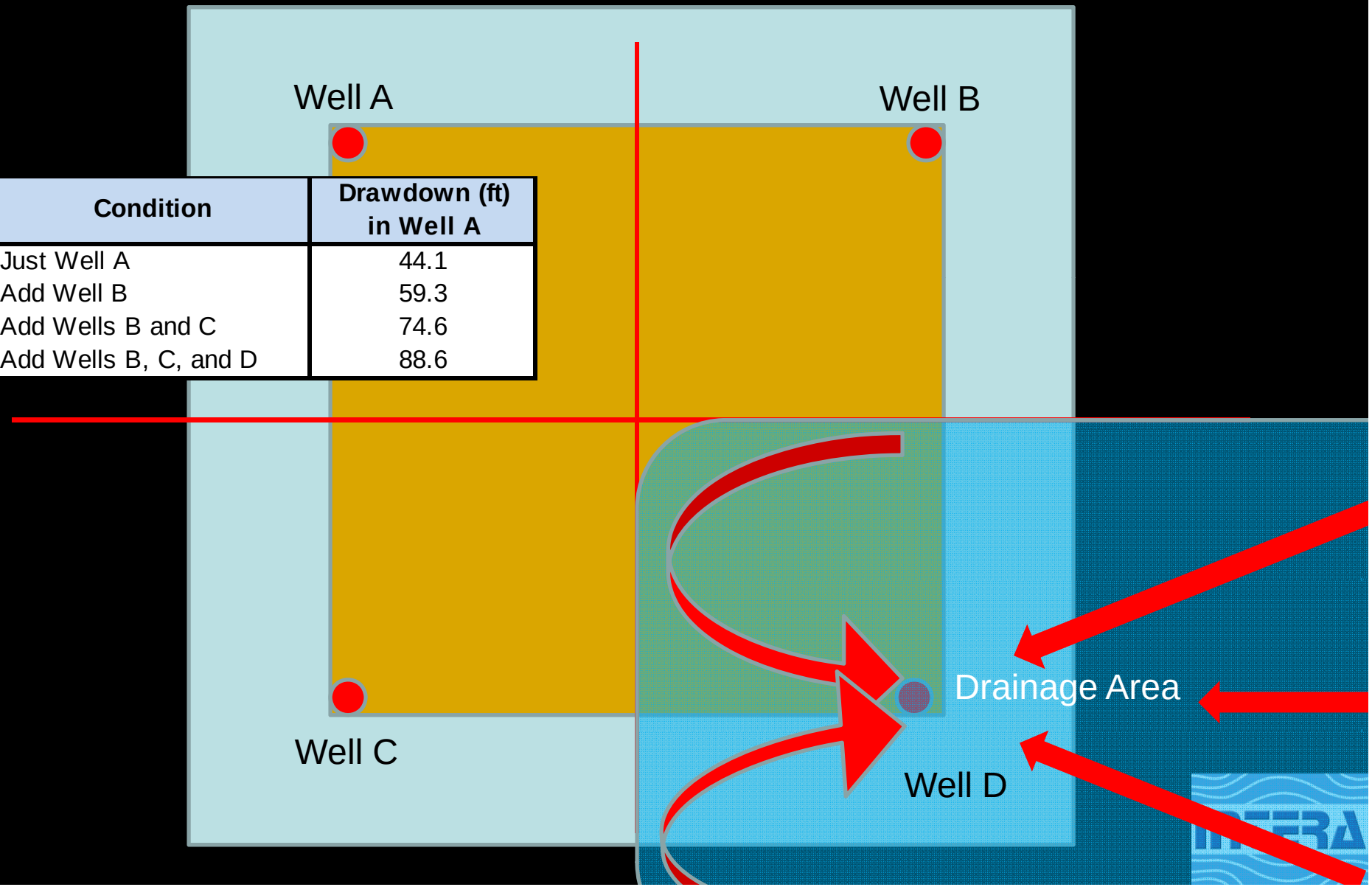


Pump Well A at 40 gpm

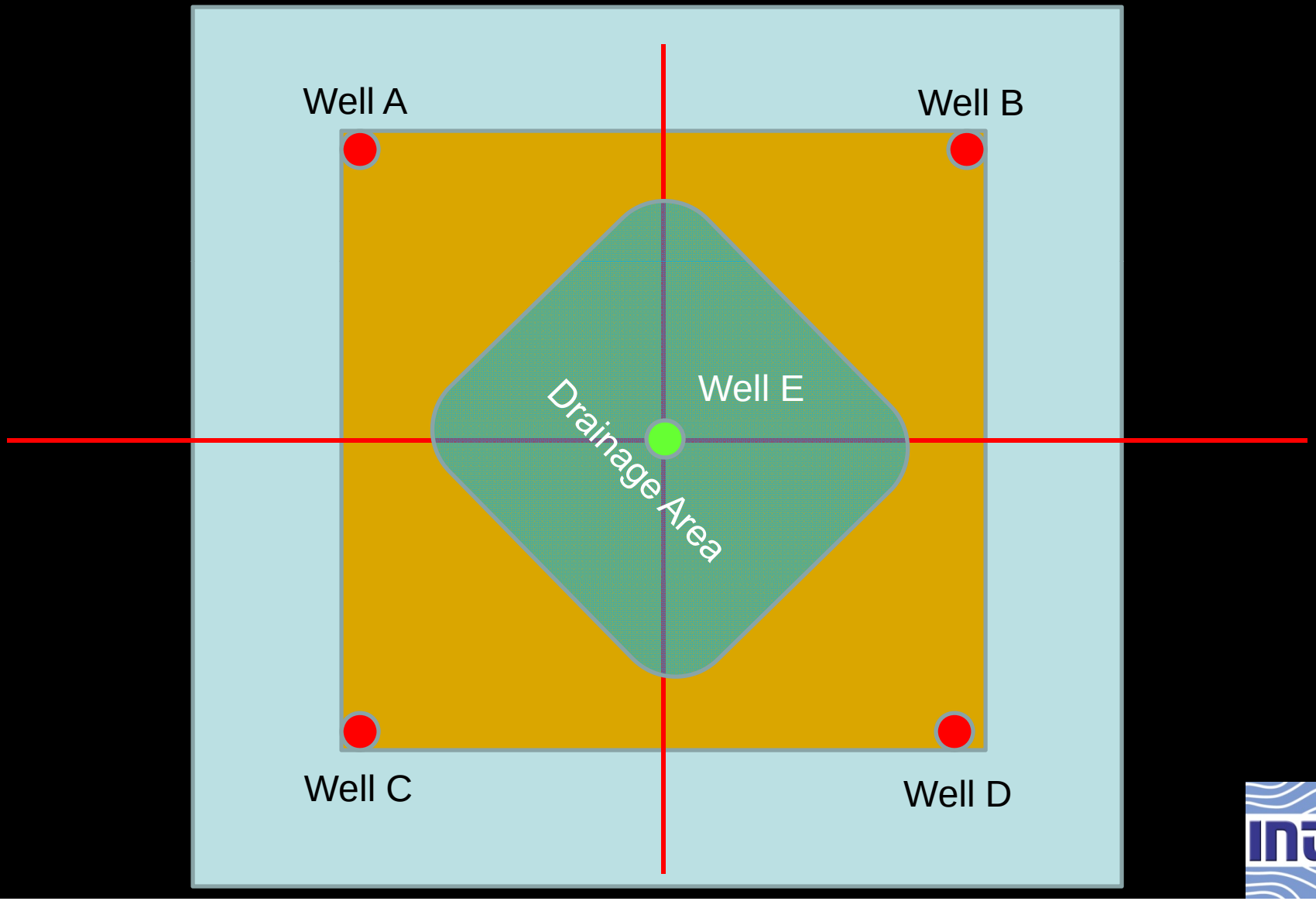
Drawdown at well A = 44 ft
Drawdown at well B = 16 ft

Impacts to Nearby Wells

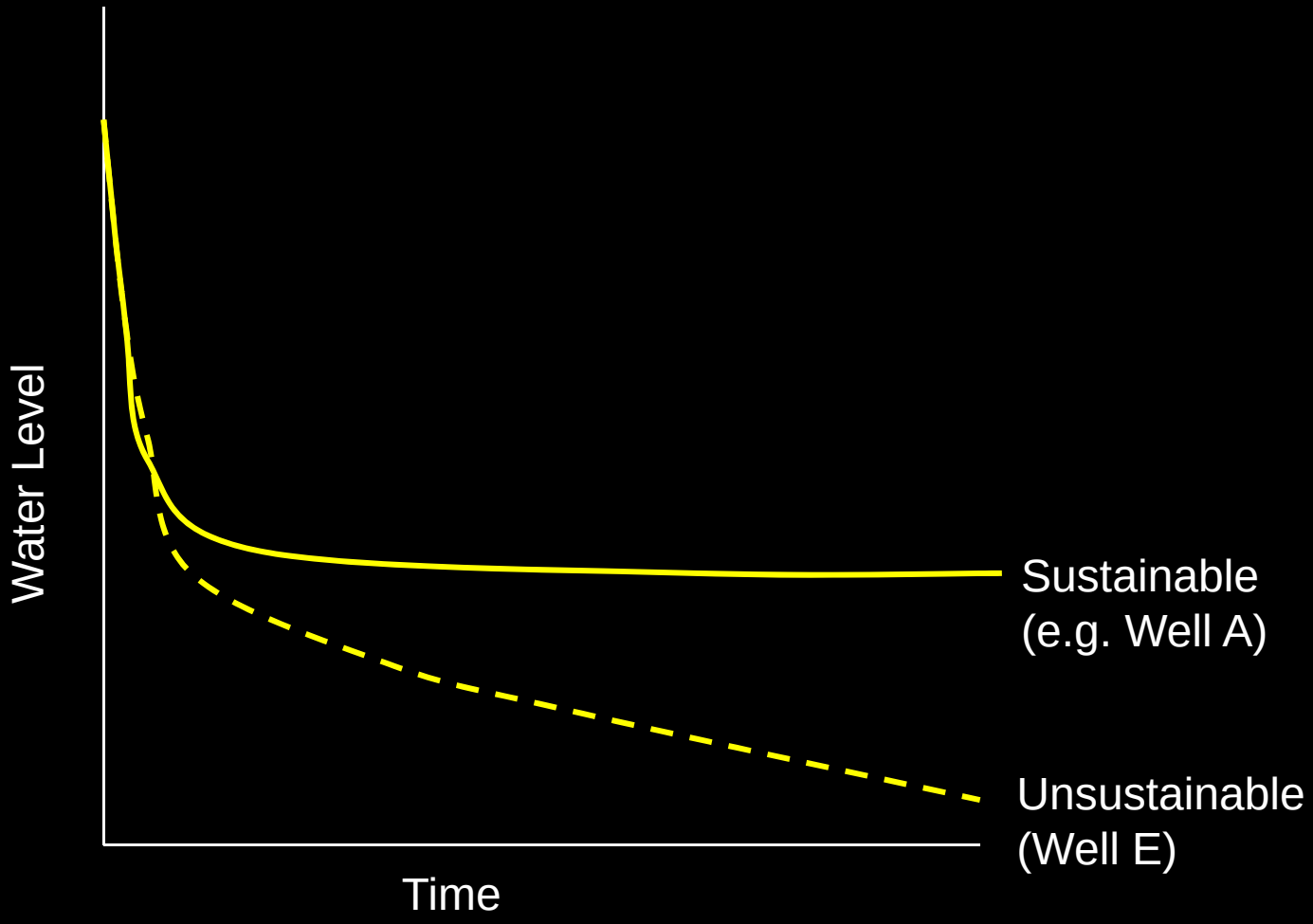
Condition	Drawdown (ft) in Well A
Just Well A	44.1
Add Well B	59.3
Add Wells B and C	74.6
Add Wells B, C, and D	88.6



Spacing Rules Protect the Owner of Well E



Impacts to Well Owner E



Approach

- Collect aquifer properties applicable to the region
- Develop representative well and flow rate scenarios
- Define guideline criteria
- Perform drawdown calculations
- Propose spacing rules

Aquifer Properties

- Literature review performed
- Yielded 48 pump test results

Statistic	Transmissivity (ft2/day)	Hyd. Cond (ft/day)
Count	48	36
Average	891.3	7.6
Median	832.2	6.1
Minimum	260.4	1.1
Maximum	2,245.8	30.6

Scenarios Evaluated

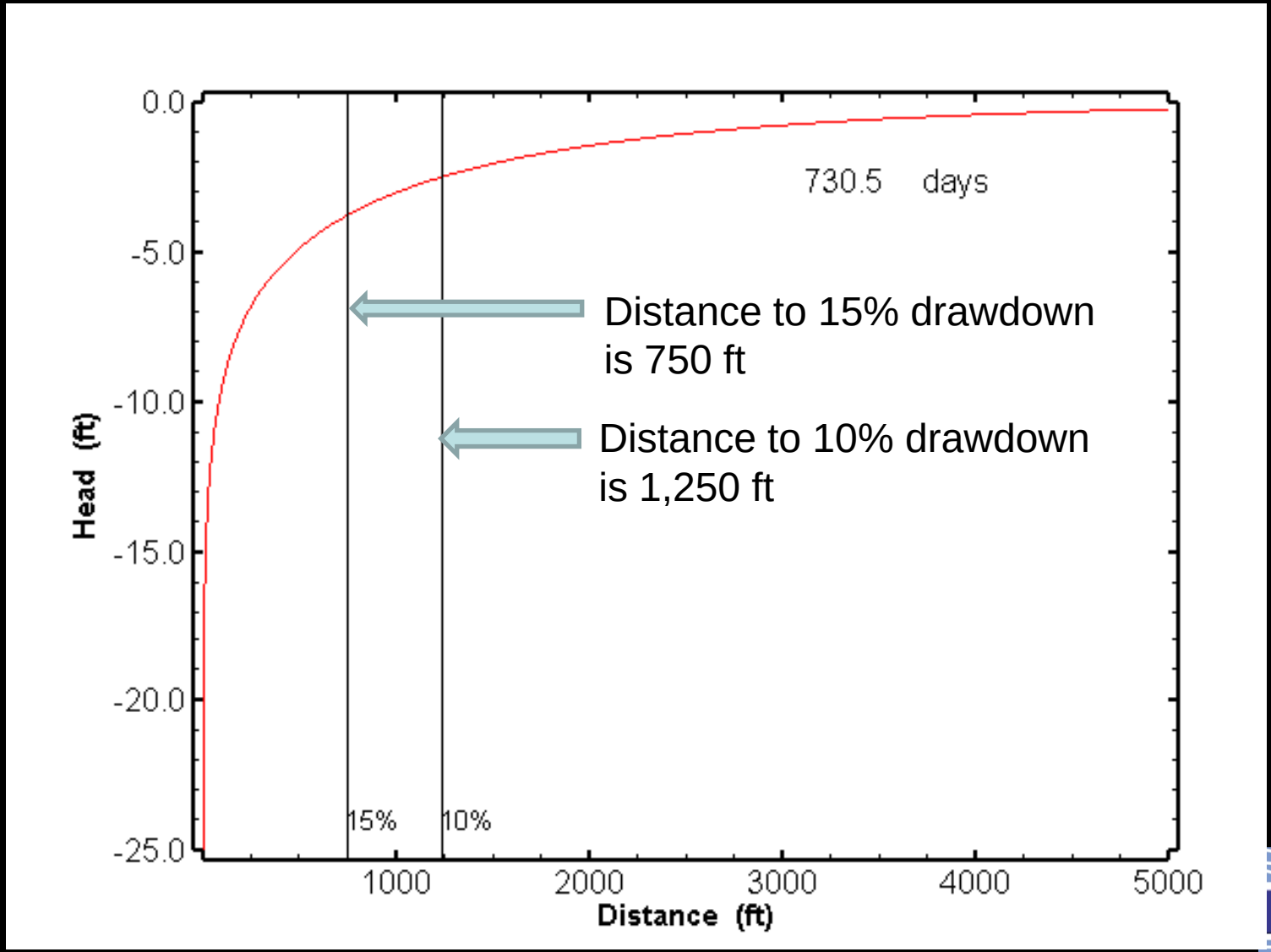
Well Screen Diameter (inches)	Annual Average Flow Rate (gpm)	Flow Rate Capacity (gpm)	Screen Length (ft)	Transmissivity (ft2/day)
5 inch or less	5	17.4	50	350
More than 5 but less than 8	21	40	80	560
8 inch or larger but less than 10	40	80	100	700
10 inch or larger	60 to 100	120 to 200	130 to 150	910 to 150

Drawdown Guideline Criteria

- Objective is to reasonably limit the impact to a neighboring well
- Estimated the distance to 10% and 15% maximum drawdown

- This implies that one would not want pumping at a neighbor's well to contribute more than 10% to 15% of the drawdown observed

Drawdown Distance Plots



Proposed Spacing Rules

Flow Rate Capacity (gpm)	Spacing (ft)
17.4 (25,000 gpd)	150
40	1,200
80	1,800
Greater than 80	2,400