

Hydrology of Rattlesnake Creek

Local Enhanced Management Area (LEMA)

Presentation to The Big Bend Groundwater Management District 2018, February 15, 2018



Layout of LEMA and Rattlesnake Creek

GMD #5

LEMA Boundary

**File 7571
Points of Diversion,
Priority = August 15, 1957**

**Groundwater Rights
Junior to File 7571**

**Groundwater Rights
Senior to File 7571**

Rattlesnake Creek Basin

0 2.5 5 10 15 20 Miles

Coordinate System: NAD 1983 StatePlane KS South
Projection: Lambert Conformal Conic



Date: 2/13/2018

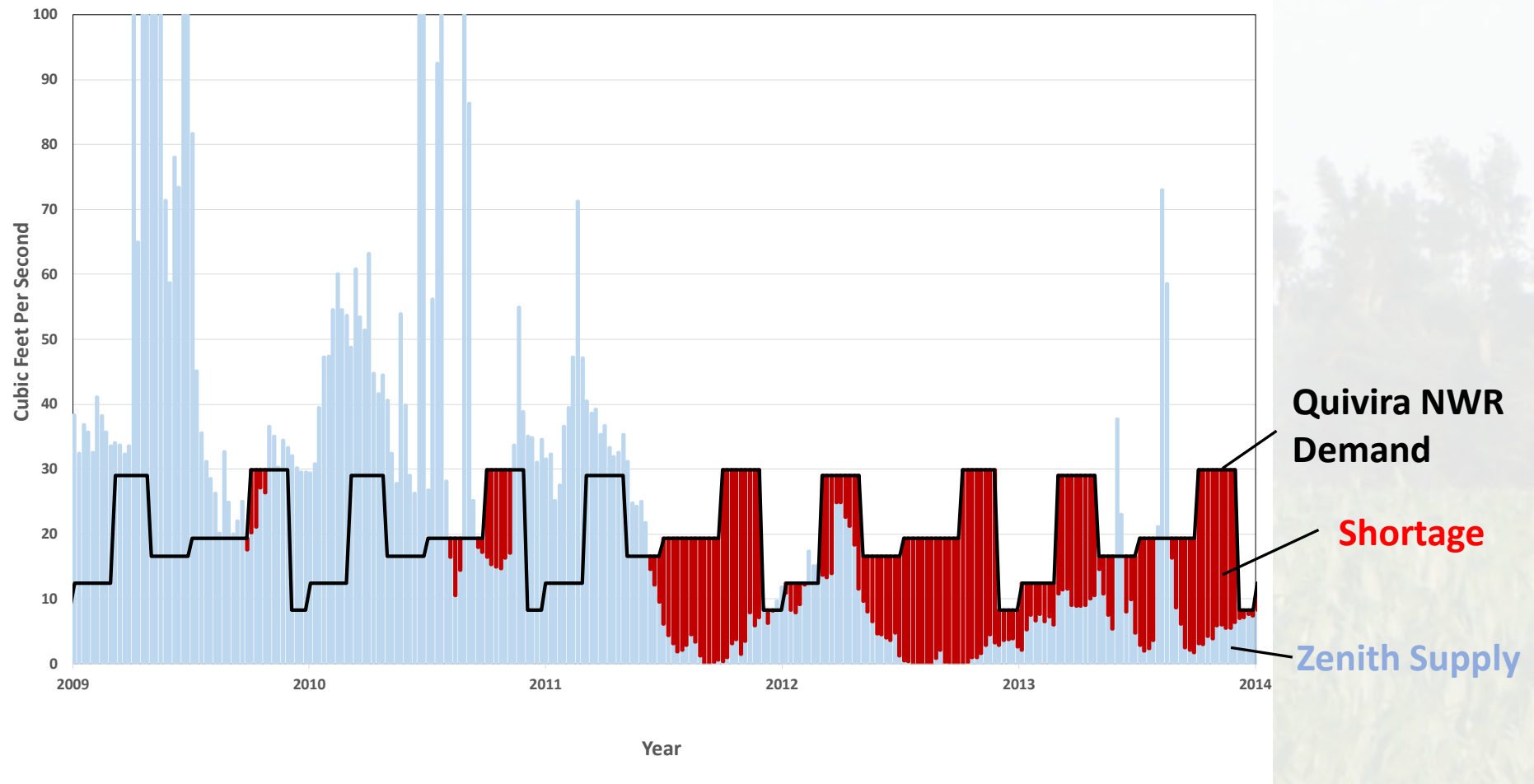


LEMA Goals and Objectives

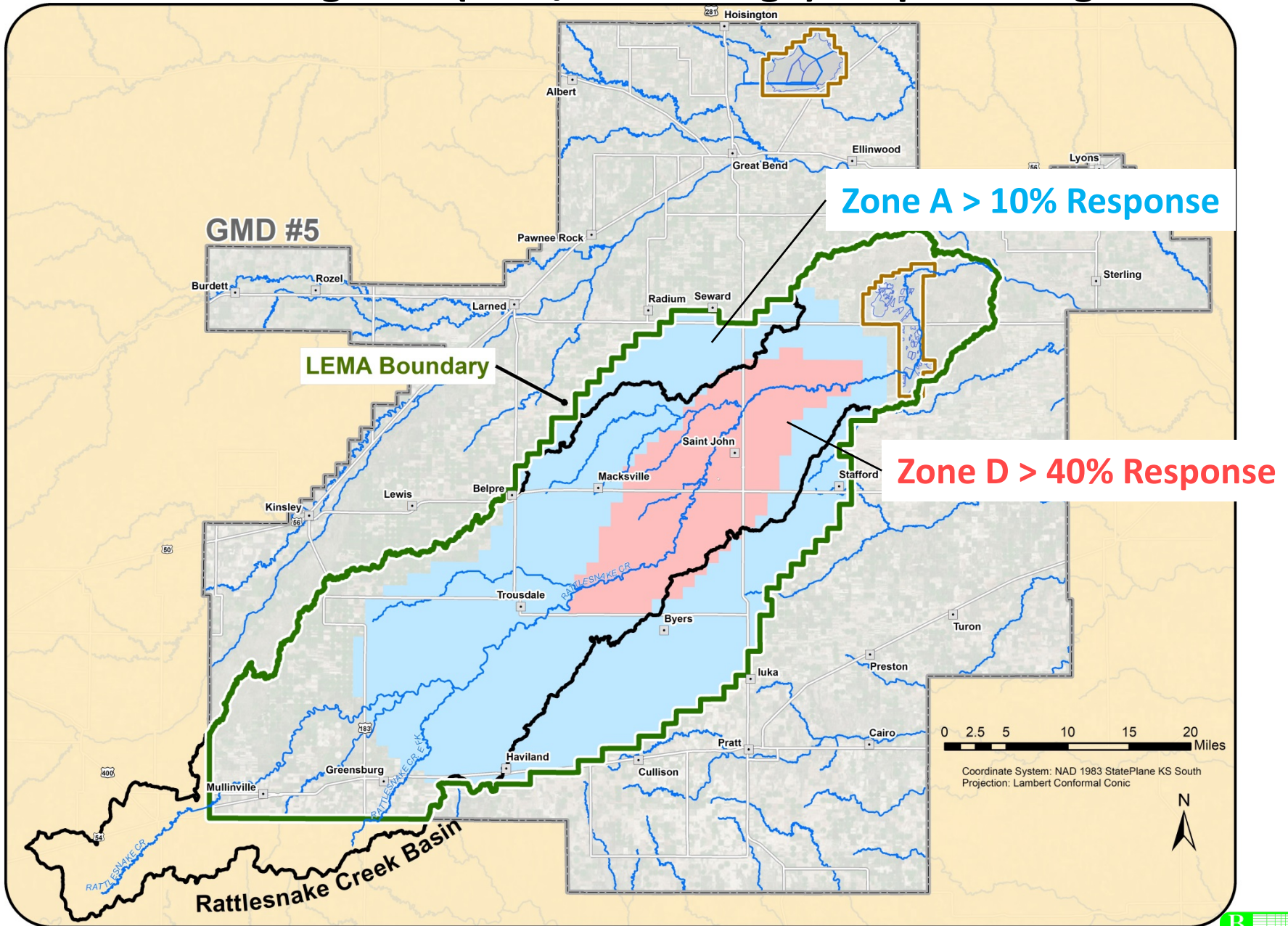
- **Address conditions regarding streamflow depletion within an area of enhanced management.**
- **Provide streamflow augmentation to the Rattlesnake Creek stream channel.**

The particular objectives are to reduce water-use in the LEMA area to a degree that will temper the growth of future streamflow depletion, and to restore the useful supply to diversion points on the upper reaches of Rattlesnake Creek.

Quivira Demand vs. Zenith Water Supply



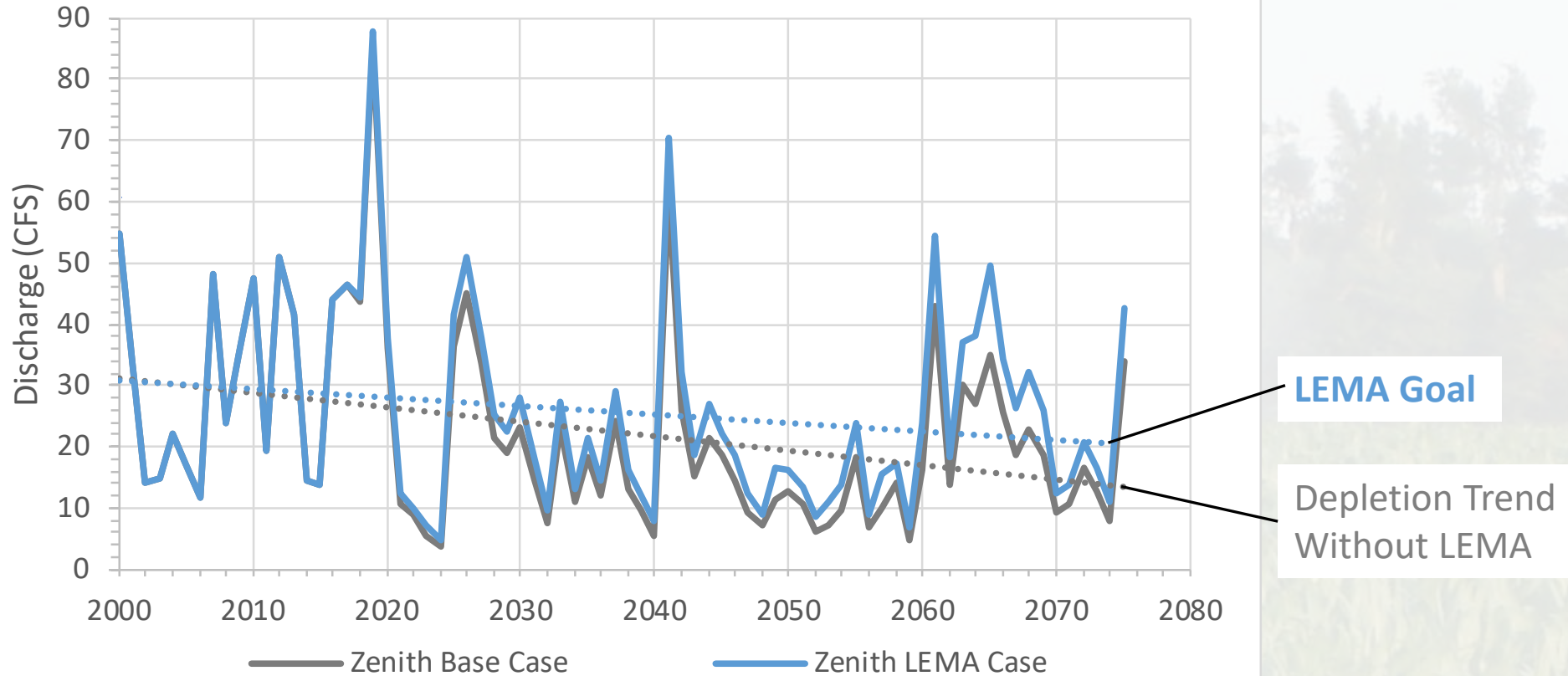
Chief Engineer (Well/Zenith Gage) Response Regions



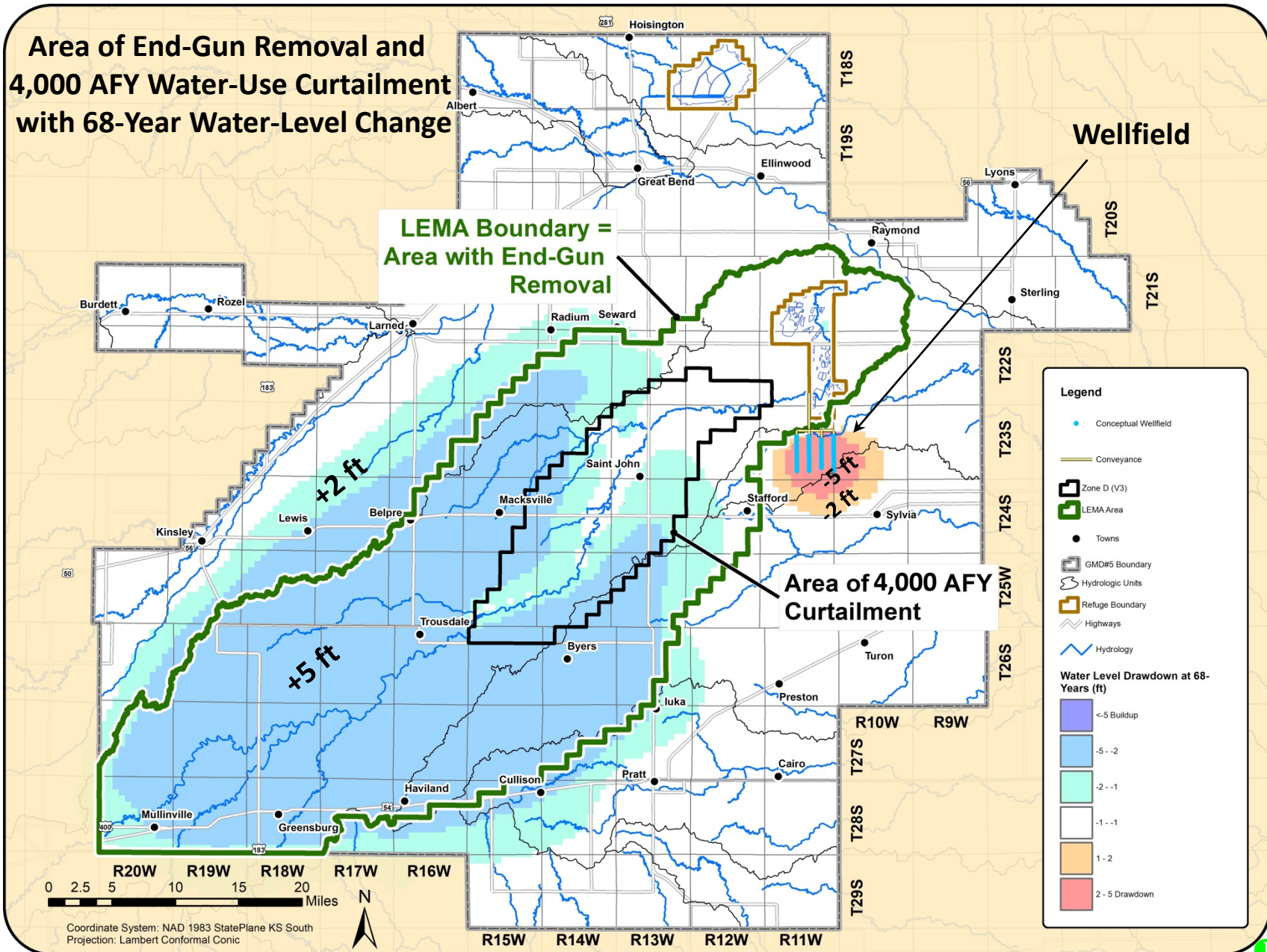
Date: 2/13/2018



Assessment of Streamflow with Reduction in Irrigation Pumping (Zenith Gage Flow - Adapted from Model Chief Engineer Model Analysis)



Area of End-Gun Removal and 4,000 AFY Water-Use Curtailment with 68-Year Water-Level Change

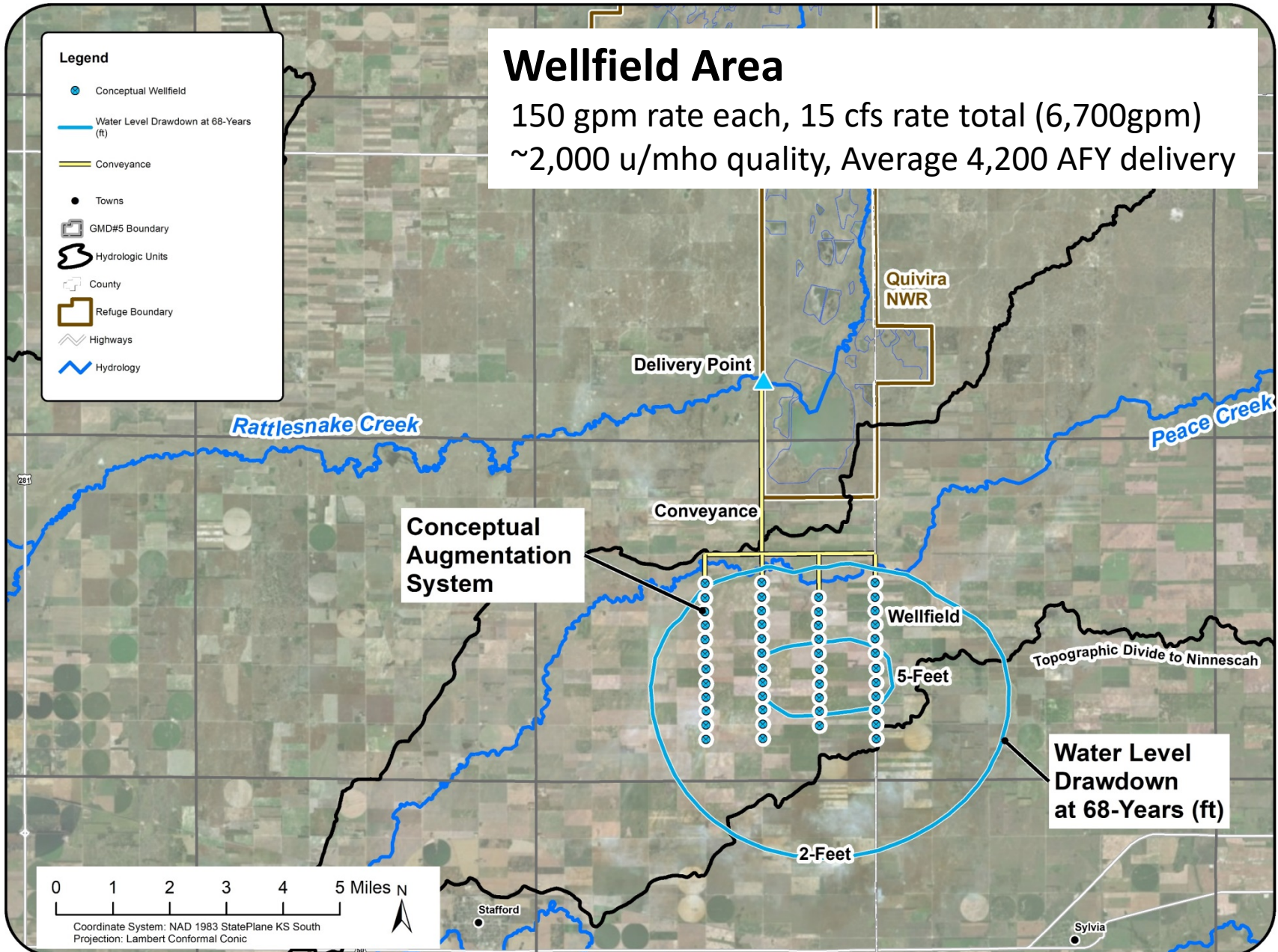


Legend

- Conceptual Wellfield
- Water Level Drawdown at 68-Years (ft)
- Conveyance
- Towns
- GMD#5 Boundary
- Hydrologic Units
- County
- Refuge Boundary
- Highways
- Hydrology

Wellfield Area

150 gpm rate each, 15 cfs rate total (6,700gpm)
~2,000 u/mho quality, Average 4,200 AFY delivery



Capture of Augmentation Water

4,200 AFY average augmentation water comes from the area of drawdown, two-thirds from capture of ET (2,750 AFY) and one-quarter from saline baseflow (1,060 AFY).

Two LEMA Goals

- 1. Supply for priority at Refuge,**
- 2. Improvement in future aquifer and stream depletion.**

Managed by two actions: augmentation and curtailment.

Questions on Hydrology of LEMA ?