

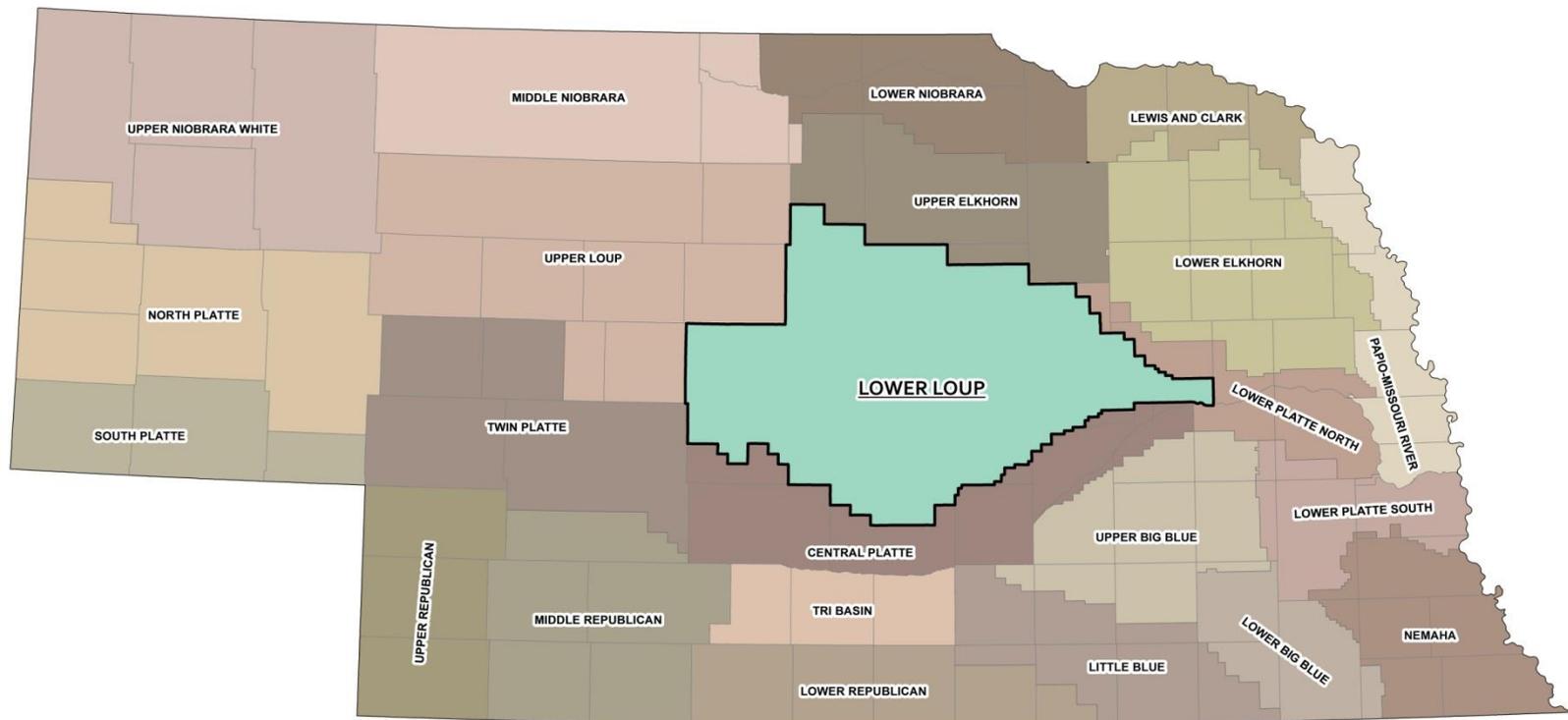
Lower Loup NRD  
Water Programs  

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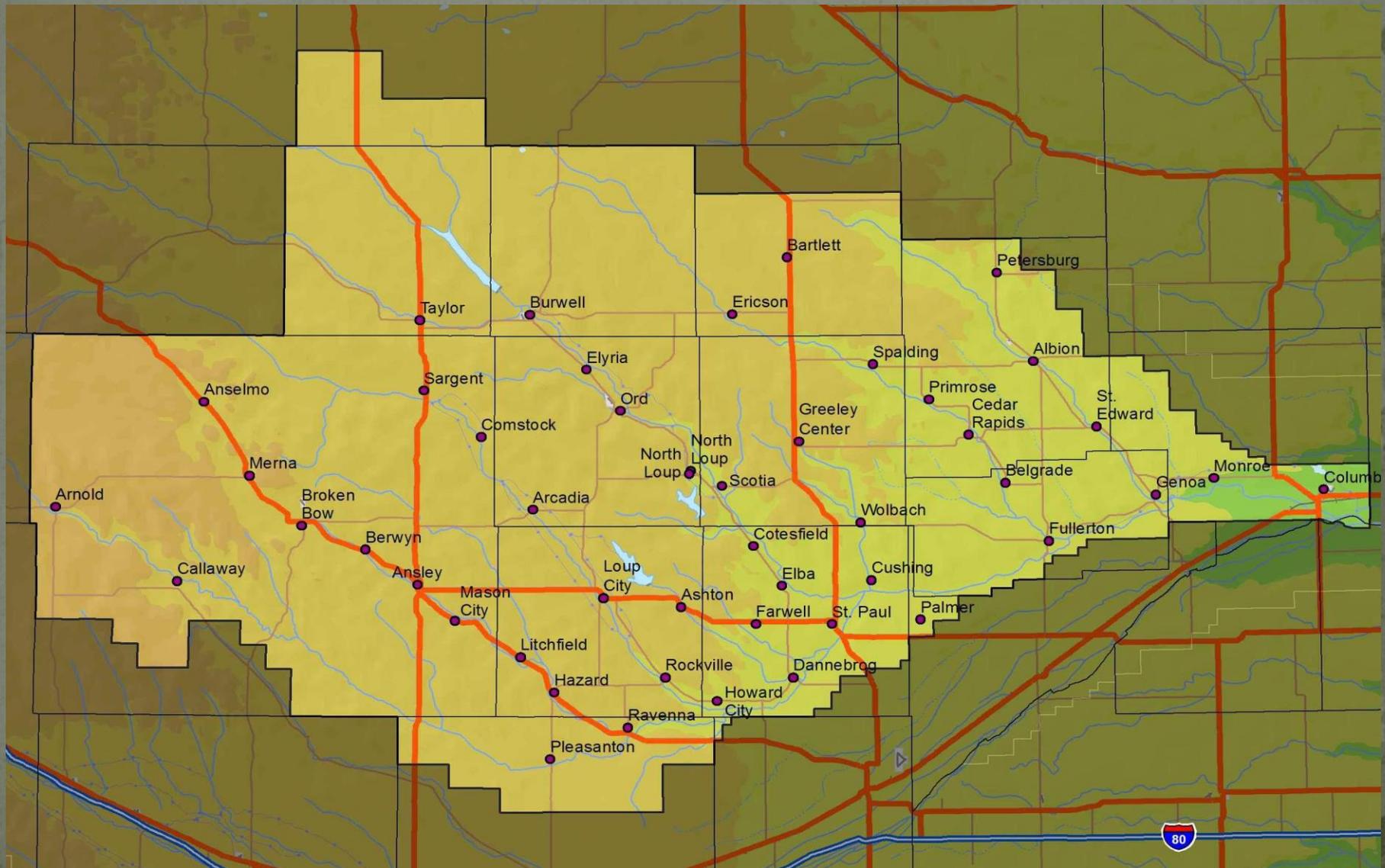
  
and  
Funding

# Lower Loup NRD

Russell Callan Assistant General Manager



# Lower Loup NRD



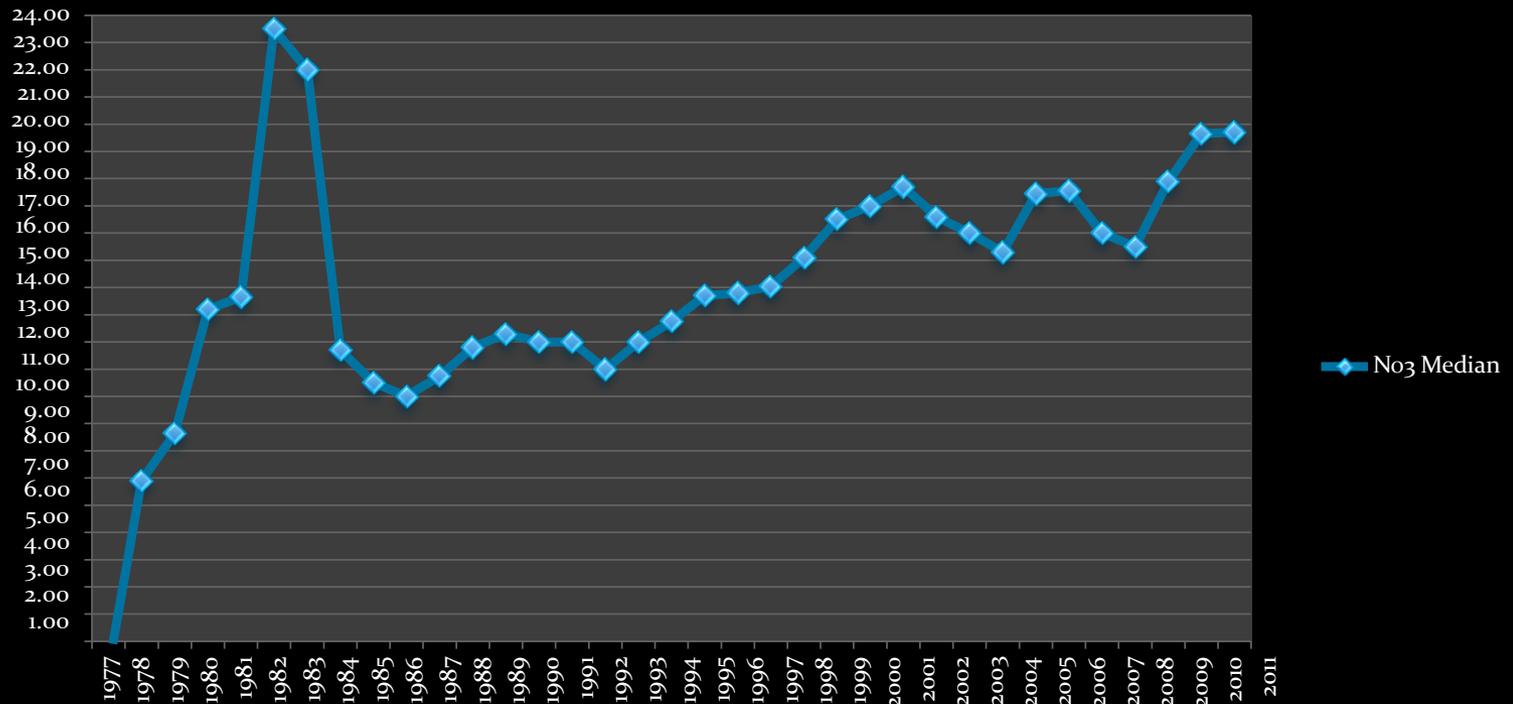
# Water Quality

- The entire LLNRD is in a Groundwater Management Area
- The LLNRD has one area that is in a Phase III Management Area for Water Quality
- The Area is subject to additional requirements for Nitrogen Management that the rest of the Areas are not. Examples:
  - No Fall Fertilizer
  - Soil and Water Sampling
  - Reporting
  - (NEW) Recommended for Next year Water Meters for the management of water application for water quality purposes
    - Calculate application of nitrogen already in the water
    - Help to prevent over irrigation to avoid leaching

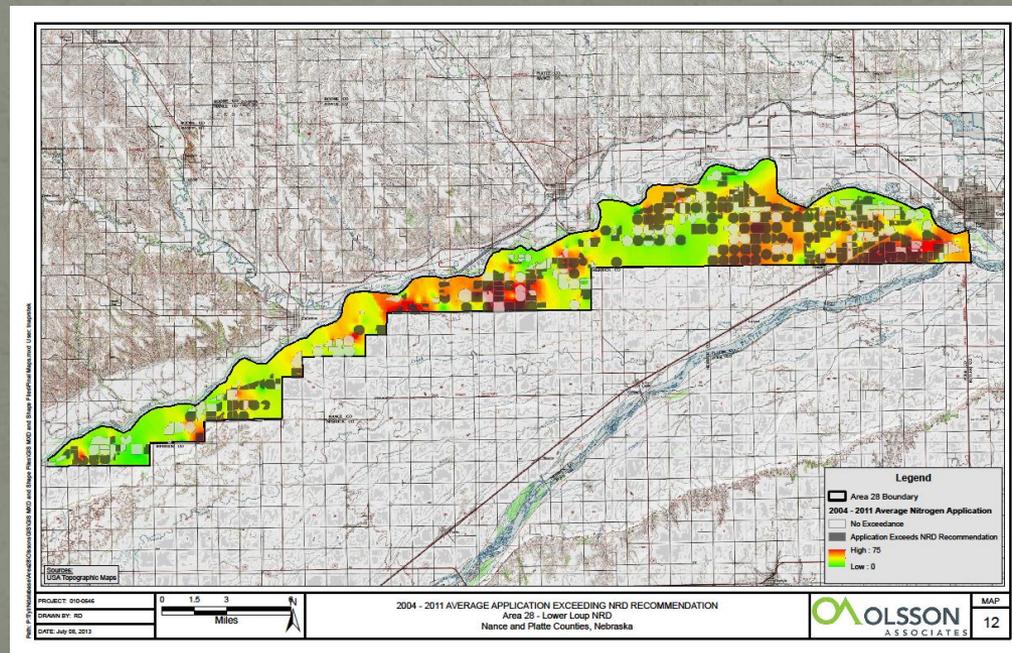


# Area 28

## Area 28 No<sub>3</sub> Median



# District contracts with Olsson's and Associates to start Groundwater Management Area Study of Area 28



# Goal of Area 28 Study

- Increase understanding of the Aquifer Recharge and Nitrogen Movement
- Review current Regulations
- Make Recommendations on how to reduce nitrogen contamination

# Recommendations

- Crop Nitrogen Recommendation Rates
  - Use the new UNL Nitrogen Calculator
  - Require the producer to follow the UNL Calculator
- Evaluate Expected Yield Accuracy
- Conversion from Flood to Sprinkler
- Nitrogen Timing
- Crop Rotations and Cover Crops
- Irrigation Scheduling
- Manure Management
- New Technologies

# Study Funding

- Department of Environmental Quality 319 Project Funding
  - NRD and DEQ work together to install Monitoring wells and obtain geologic data and water quality data and incorporate into Olsson's Study
  - 319 funds \$57,630.00
  - NRD funds \$38,420.00
  - Total 319 Project \$96,050.00
- LLNRD Works With Olsson Associates
  - Olsson Study Costs \$153,240.00
- Total Study Costs \$249,290.00

# Water Quality Funds

- LLNRD Budget for Water Quality 2014
  - State and Grant Funding
    - 319 Grant WHPA Sampling \$15,000
    - DNR Water Resources Fund \$95,000
    - Well Decommissioning \$7,500
  - LLNRD Budget for Water Quality 2014
    - Property Tax Dollars \$717,750
      - \$550,000 for Water Meters in Phase III Area
- Total \$835,250

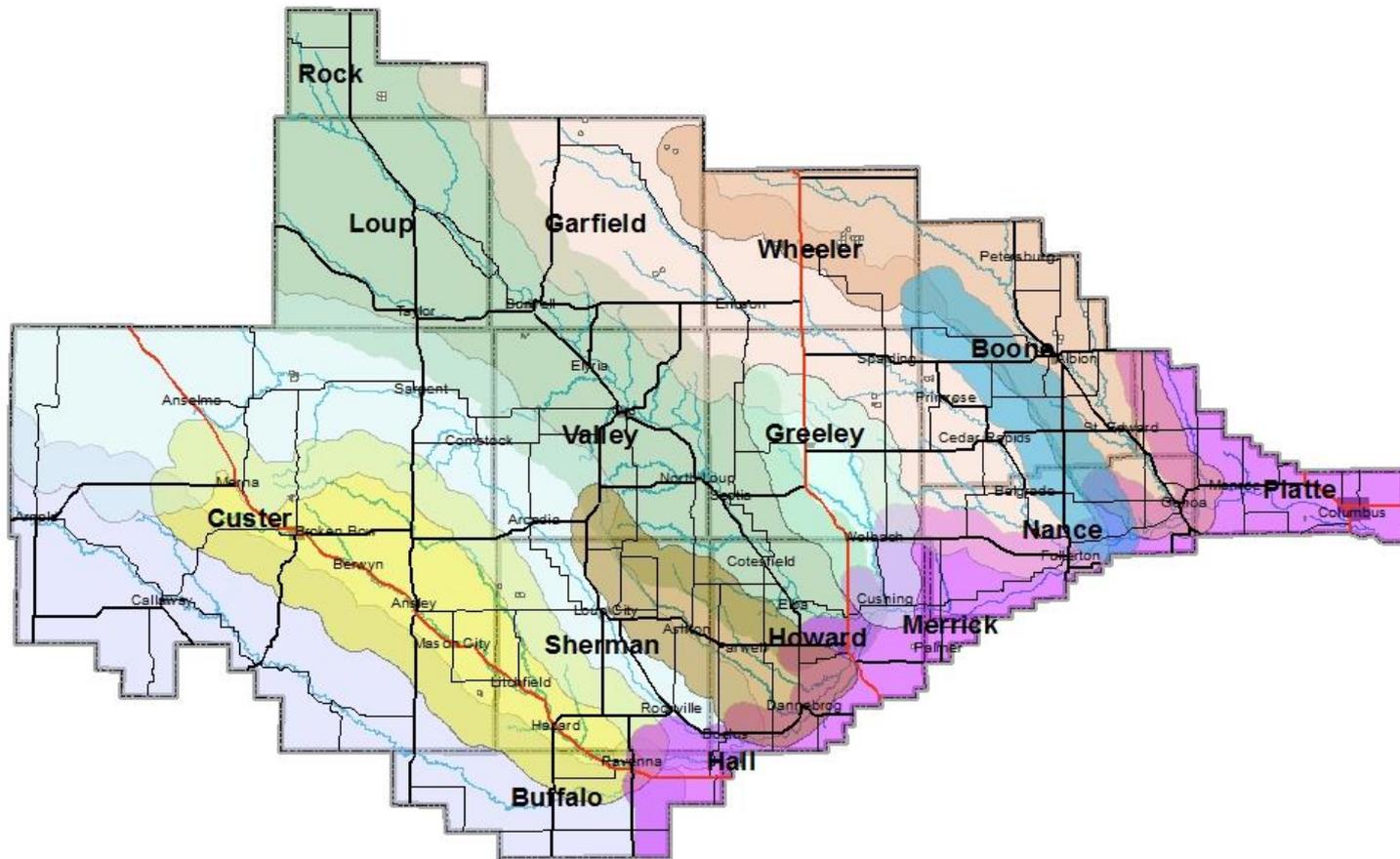
# Water Quantity

- LB962 sets the Ball Rolling
- Preliminary Determinations come out on Fully-appropriated Status
- Annual Evaluation Indicates Basin could be determined to be fully-appropriated in the near future.
- Lower Loup NRD Board of Directors elect to take proactive approach to avoid fully-appropriated status.

# Well and Irrigated acre moratoriums

- Irrigation Well Moratorium 2006
- Elkhorn Loup Model (ELM) 2007
- Preliminary Determined Fully-Appropriated 2008
- Irrigated Acre Moratorium 2008
- Requires Certification of Groundwater and surface water  
Irrigated Acres
  - Groundwater 1,015,607
  - Surface water 155,077.6
  - Groundwater/Surface water 48,636.33
  - Total 1,219,320.66
- Board Approves Transfers of Groundwater Irrigated Acres
  - Total Acres transferred as of July 2013 24,600 Acres
  - Contract /Agreements 524

# Transfer Basins



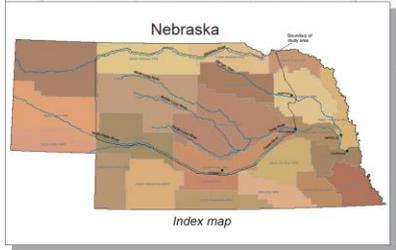
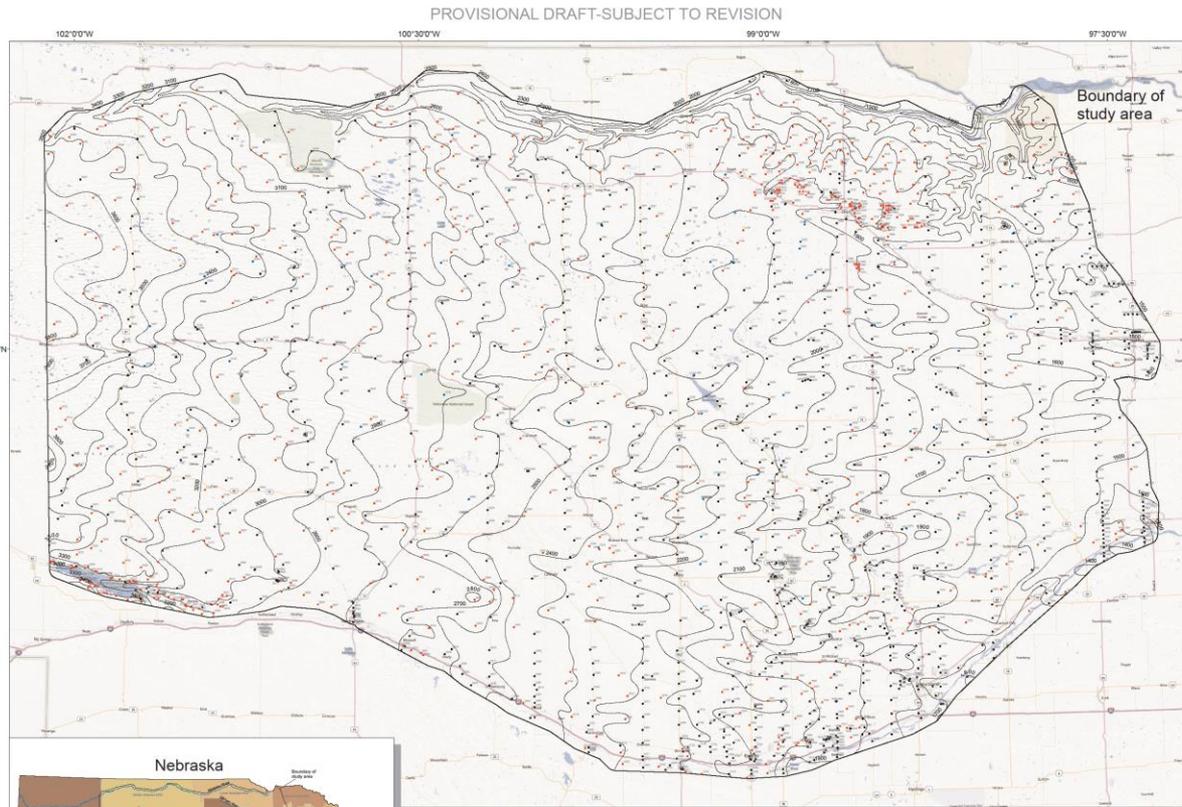
# Determination reversed and LB 483 Passed

- 2009 LB 483 was passed to allow us to Develop 10,000 Groundwater Irrigated acres in 4 years
- LLNRD Develops a ranking criteria and method to give out the NEW Acres
- That process has now expired and the LLNRD Board has Adopted a similar process to allow development BUT they review the information and decide if new acres are allowed or not
- In 2013 there will not be any new acres allowed to be developed

# Elkhorn Loup Model

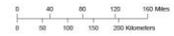
- Groundwater Model Developed by USGS in cooperation with Department of Natural Resources, UNL Conservation and Survey and the 8 Affected NRDs
- Lower Loup NRD
- Upper Elkhorn NRD
- Upper Loup NRD
- Lower Elkhorn NRD
- Lower Niobrara NRD
- Middle Niobrara NRD
- Lower Platte North NRD
- Lewis and Clark NRD

# Elkhorn Loup Model



Base Data: U.S. Census Bureau, Agriculture, 1982, 1:100,000  
 National Center for Air Quality, 1982, 1:100,000  
 National Center for Air Quality, 1982, 1:100,000  
 National Center for Air Quality, 1982, 1:100,000

- EXPLANATION**
- 3000  
 Base of layer one elevation. Dashed line indicates where approximately located. Contour interval 100 feet. Vertical datum is the National Geodetic Vertical Datum of 1929 (NGVD 29). Elevation refers to distance above the vertical datum.
  - Registered Water Well  
 Surface Geophysical Data  
 Test Hole



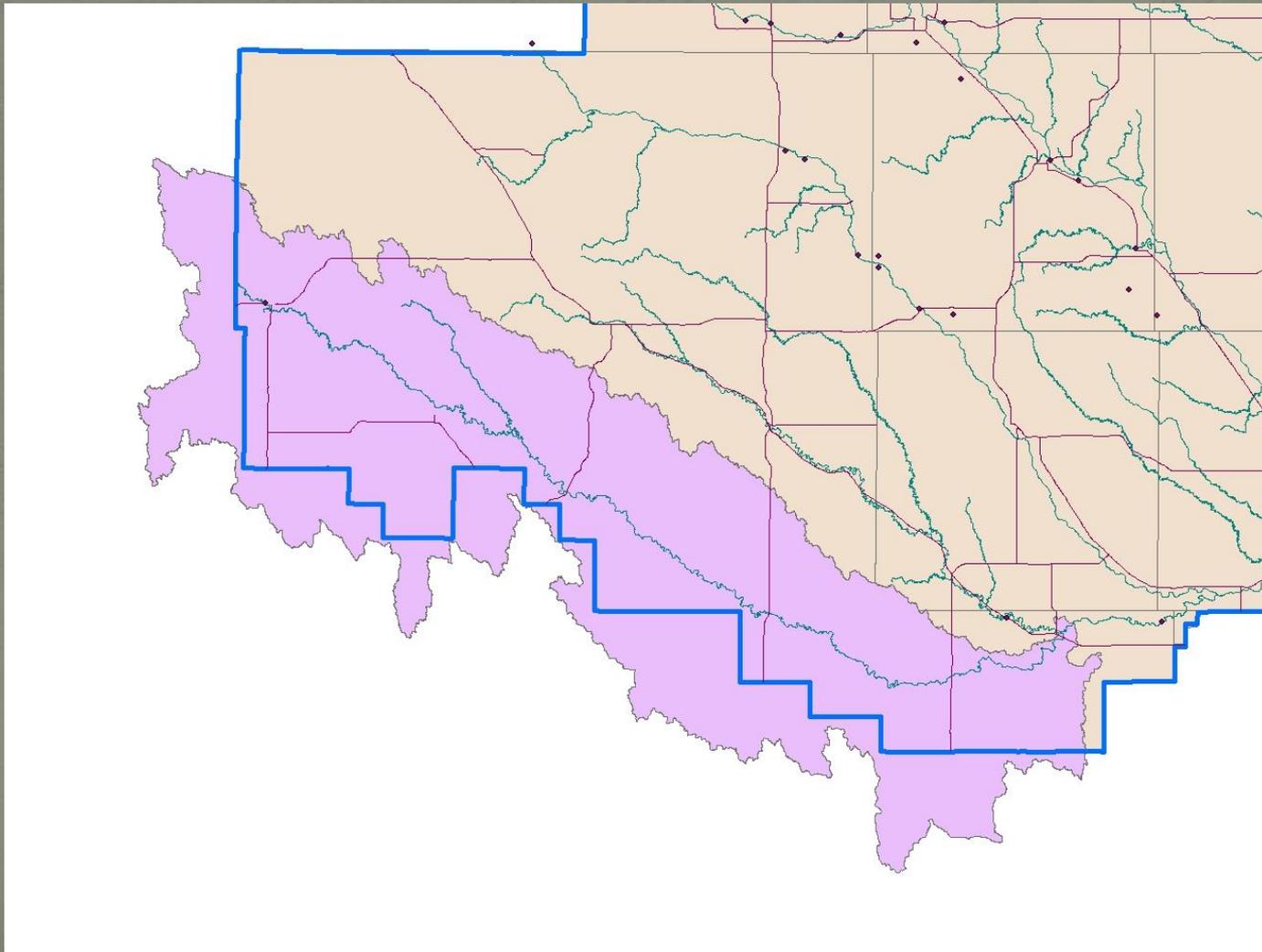
# Dollars used for the ELM Model help DNR in Basin Determination and District in Irr. Acre Transfers and LB 483 Process

- DNR Uses ELM Data in Basin Determination
- The ELM model Produces a Stream Depletion Map (SDF).
- SDF Estimates a Percent effect to a Stream over time by Groundwater pumping.
- The model estimates the percent effect by a well in every section within the Model area (%in 50yrs).
- Allow transfers to happen as long as the effect to a stream are less than or equal to the area it was transferred from.
- Transfers must be within the same river basin moved downstream and can't increase the number of irrigated acres within the Lower Loup NRD.
- Applications for LB483 acres received a lower ranking the closer to the stream they were.

# ELM Funding (Original Grant App)

- Interrelated Water Management Plan Program Funds
  - \$2,454,800
- Local Match
  - \$613,700
- USGS Funds
  - \$357,500
- Total Project
  - \$3,426,000
  
- Final Report expected Spring 2014

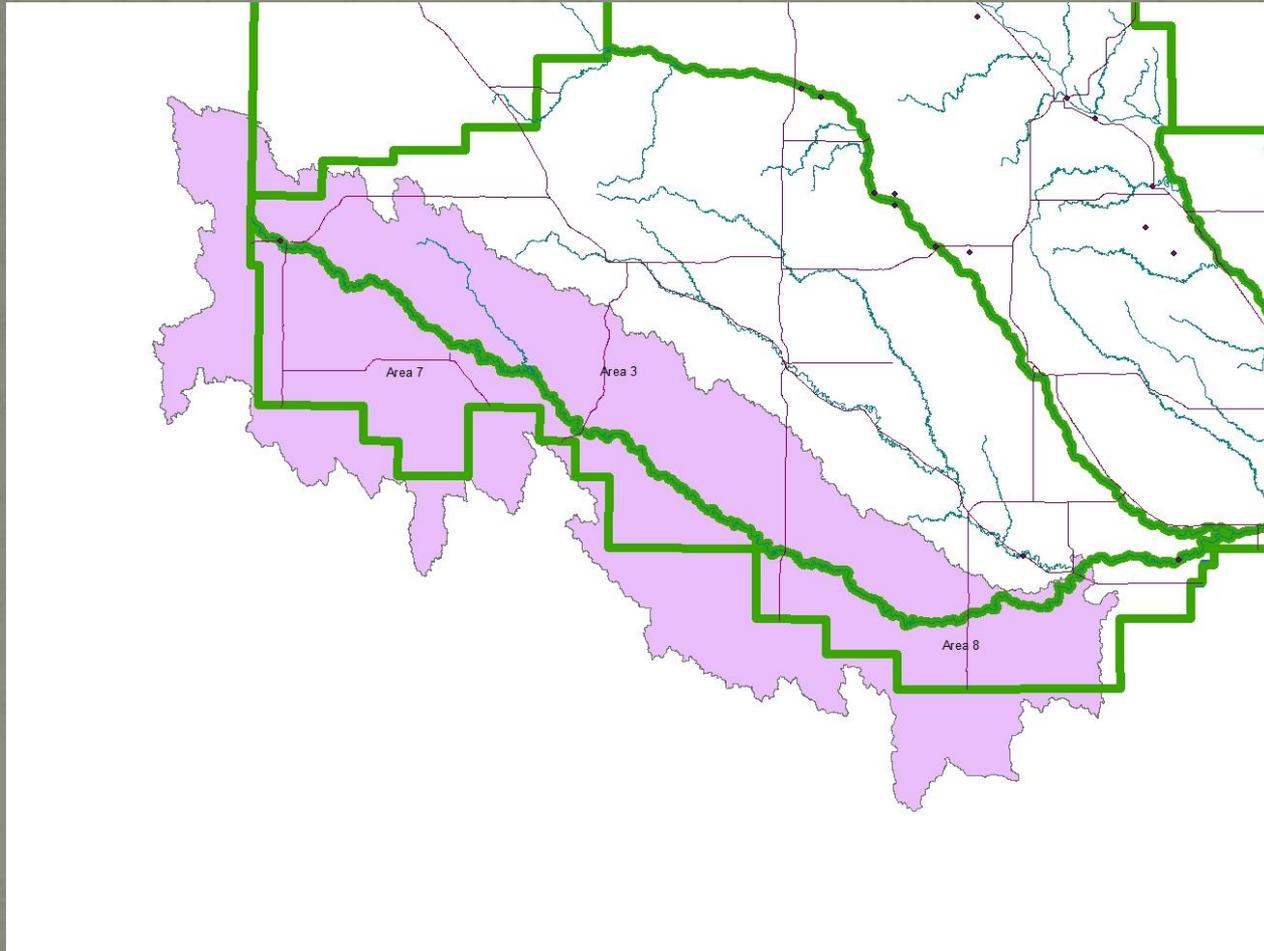
# South Loup River Watershed



# South Loup River Project

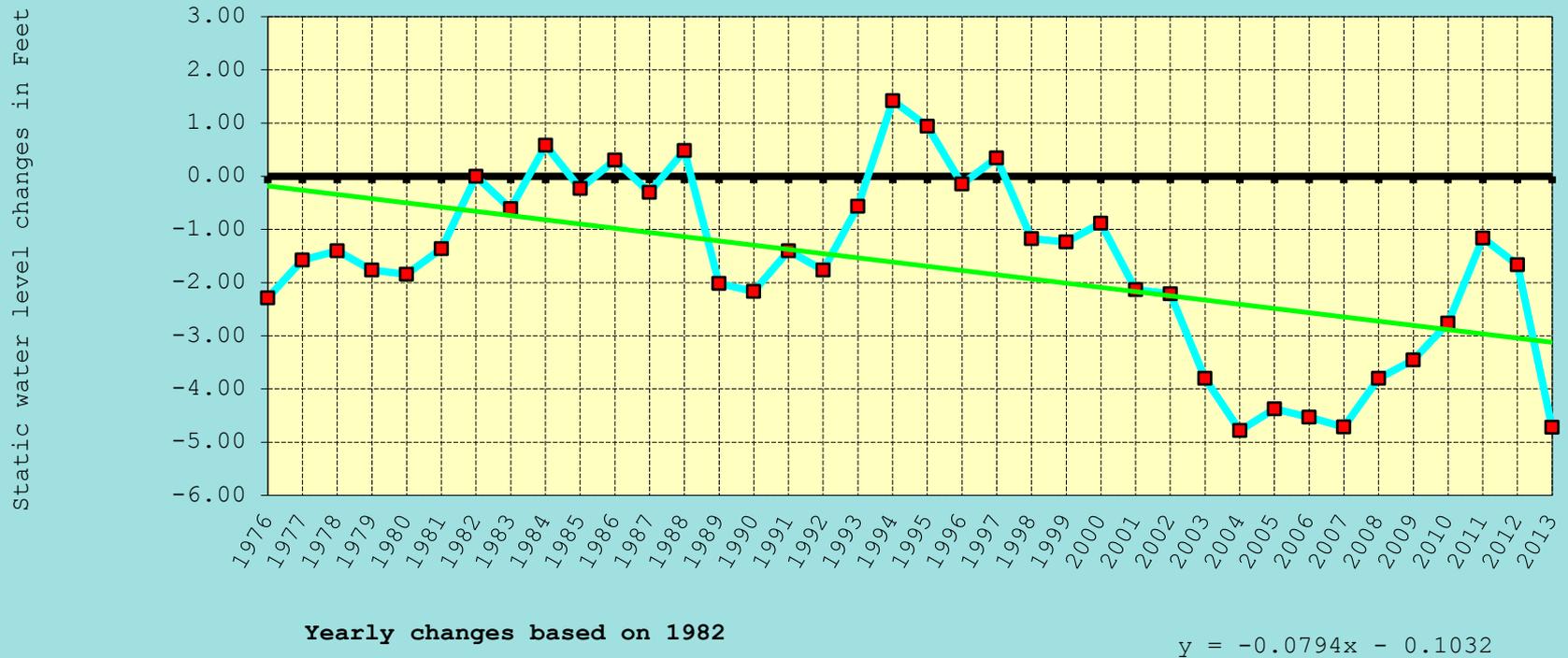
- The District is focusing on concerns in the South Loup River Basin
- We have seen declining trend line in Groundwater levels
- Also a Declining Trend line in surface water flows

# South Loup Water Quantity Areas



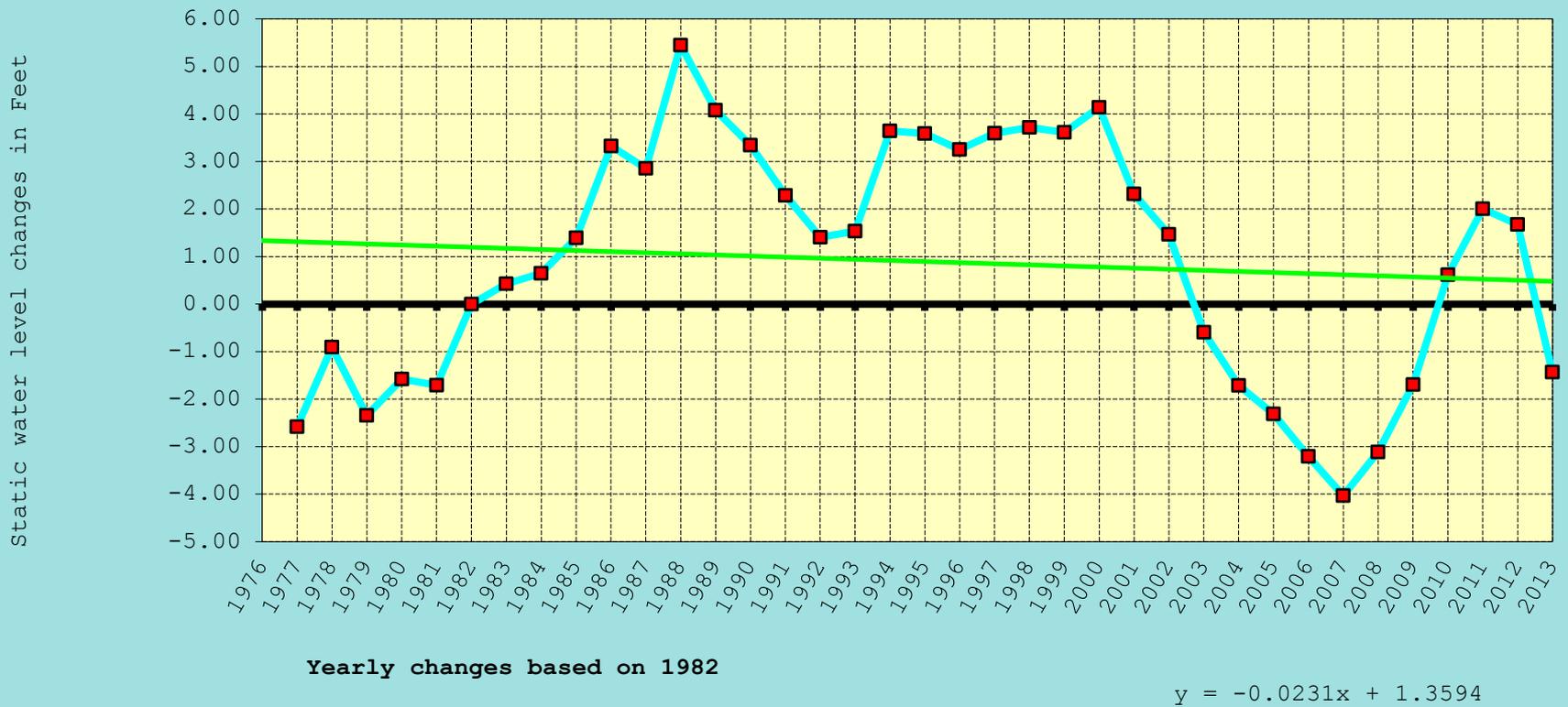
# Area 7 Static Water Levels

**AREA 07** - Spring SWL Trends  
Lower Loup Natural Resources District

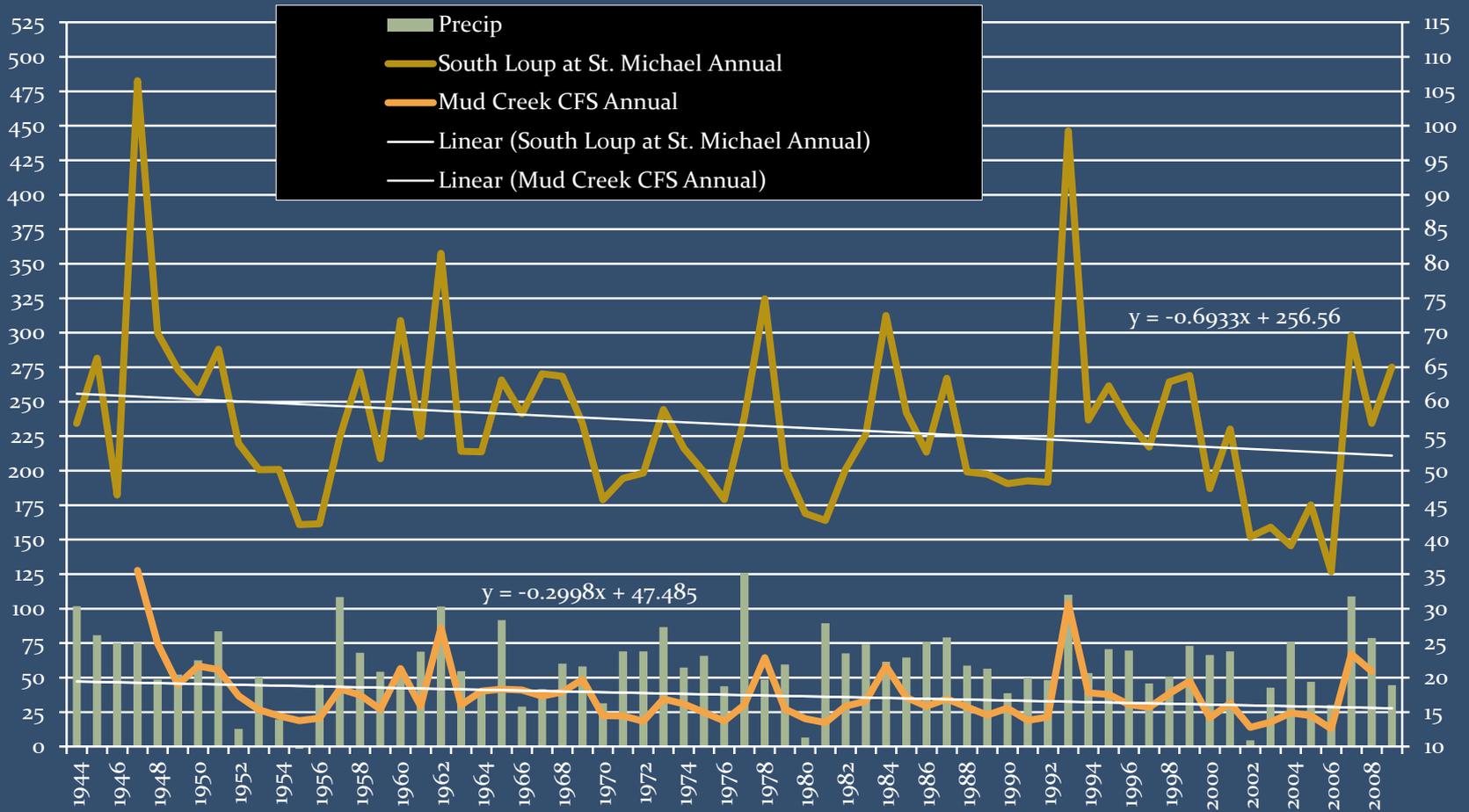


# Area 8 Static Water Levels

**AREA 08 - Spring SWL Trends**  
Lower Loup Natural Resources District



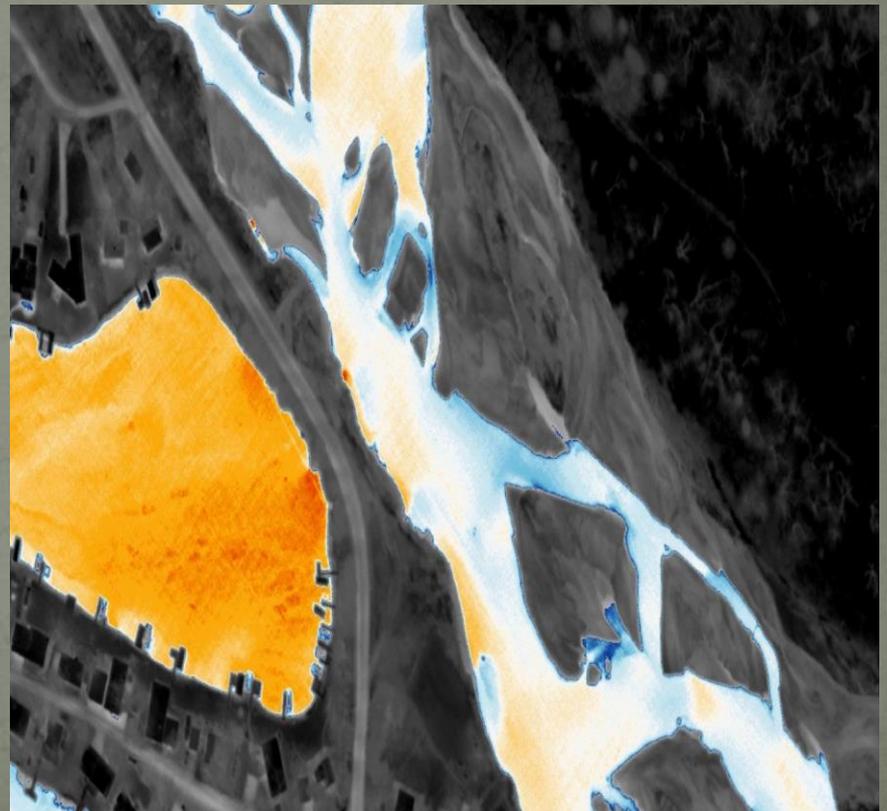
# South Loup – Mud Creek Flows



# Investigating the Spatial and Temporal Characteristics of Groundwater discharge in the Loup River Basin (3 year)

## Airborne thermal infrared imagery

NE Env Trust	\$303,000.00
Upper Loup NRD	\$71,000.00
Lower Loup NRD	\$45,000.00
USGS	\$177,000.00
Proposed Project Total	<b>\$596,000.00</b>



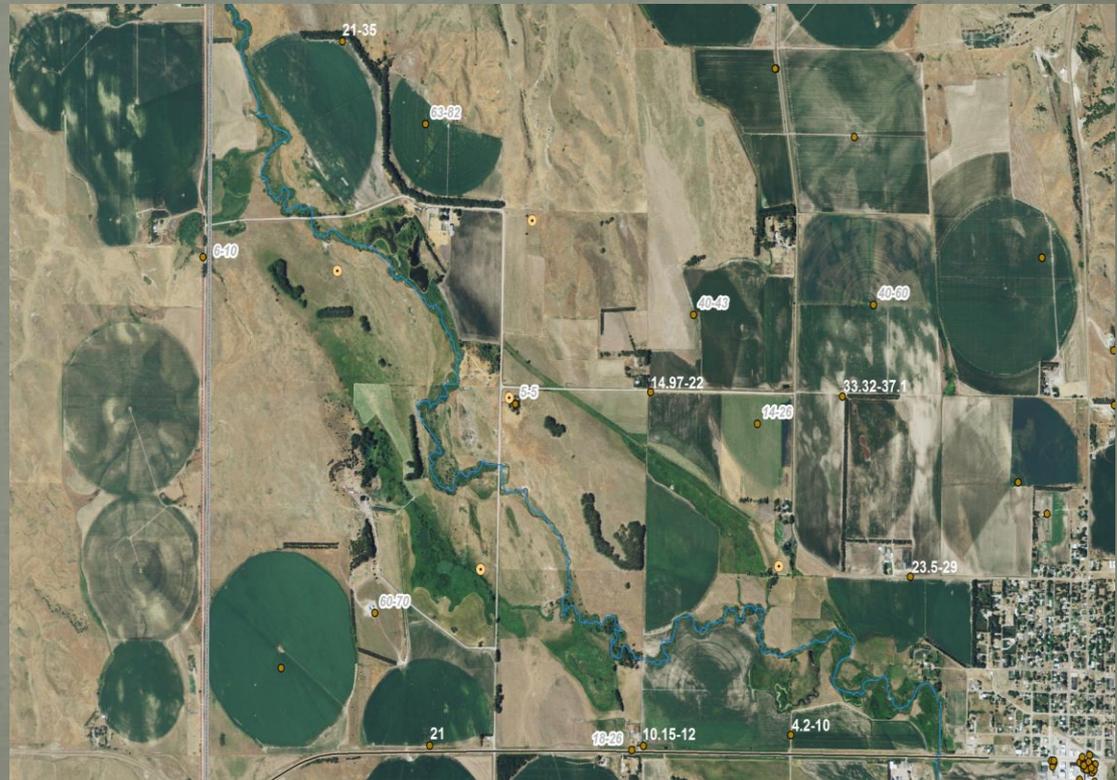
# A new approach to detailed integrated water budgets in east-central Nebraska Drainage basins

ET \$185,380.00 NRDs \$37,160.00 USGS \$51,460.00 DNR \$8,400.00 UNL \$4,000.00

**Proposed Total Project \$ 286,400.00**

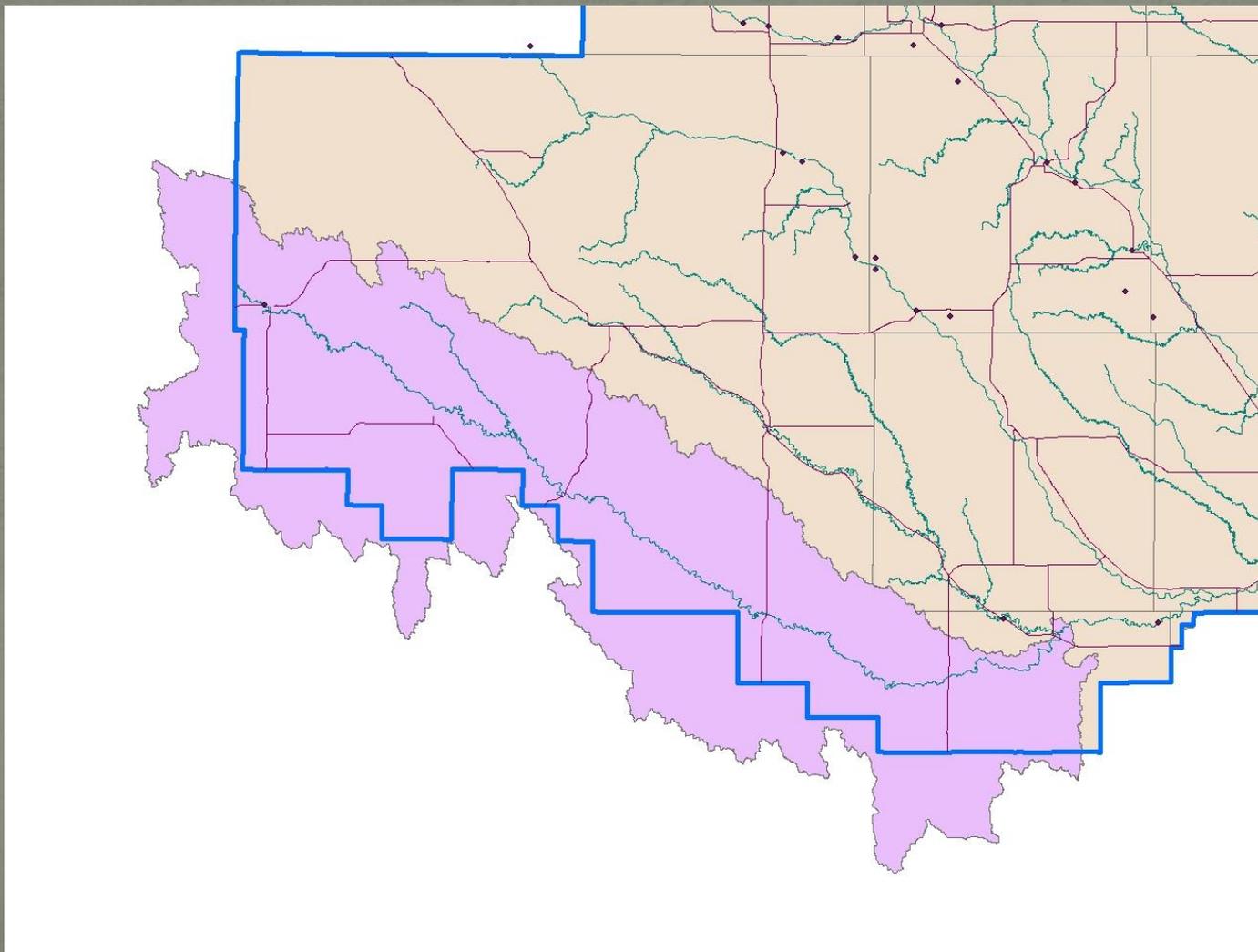
## Project Participants

Nebr Env Trust  
Lower Elkhorn NRD  
Lower Loup NRD  
Upper Loup NRD  
Upper Elkhorn NRD  
Lower Platte North NRD  
USGS  
NDNR  
UNL



(3 year project)

# South Loup Watershed Plan?



# South Loup Watershed Plan Goal?

- Get a better understanding of the Groundwater Surface water interaction
- With the Plan list and inventory the watersheds resources, land use, potential problems and assets
- Put together data that is necessary to develop a detailed local groundwater model
- Use these tools to then determine the need or not for a groundwater recharge/stream-flow augmentation/recreation/flood prevention structure(s) ??????

# South Loup Plan Funding

- Watershed Plan
  - \$150,000
- Monitoring / Observation Well Installation
  - \$10,000

# Lower Platte River Basin Coalition

- Develop a Basin Water Plan for the Loup Elkhorn and Lower Platte Basins
- Look at water availability and water needs
- Coalition Members
  - Nebraska Department of Natural Resources
  - Lower Loup NRD
  - Lower Platte South NRD
  - Lower Platte North NRD
  - Lower Elkhorn NRD
  - Upper Elkhorn NRD
  - Upper Loup NRD
  - Papio Missouri River NRD

A photograph of a sunset over a large body of water. The sun is low on the horizon, creating a bright, shimmering reflection on the water's surface. The sky is a mix of orange, yellow, and dark blue, with some light clouds. The text "THE END" is written in a white, serif font in the upper right quadrant of the image. The entire image is framed by a rough, torn-edge border.

THE END