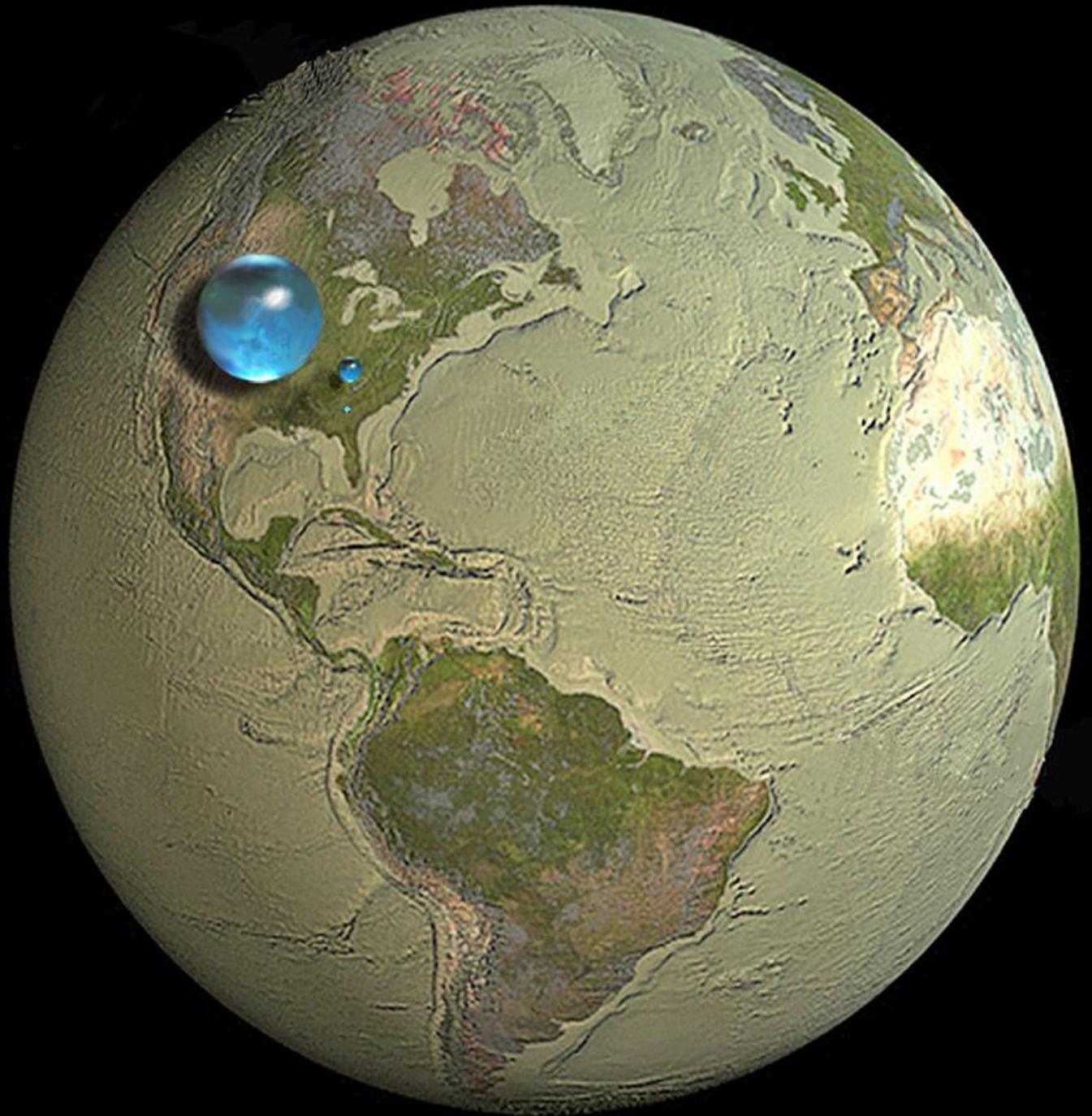


All the water  
on Earth  
would fit into  
a sphere 860  
miles wide.

*All the fresh  
water, sea water,  
ground water,  
water vapor and  
water inside your  
bodies.*

USGS

<http://ga.water.usgs.gov/edu/earthhowmuch.html>



# FRENCHMAN-CAMBRIDGE IRRIGATION DISTRICT

Water Funding Task Force

August 22, 2013

Brad Edgerton, Manager

What are the Issues FCID is faced with?

*Water is Life*

# Frenchman-Cambridge Irrigation District

## Background Information:

FCID was established May 29, 1947

Located in the Republican River Basin and covers 4 Counties; Hitchcock, Red Willow, Furnas and Harlan

# Frenchman Cambridge Irrigation District

3 Federal Reservoirs with 143,000 AF of Irrigation Storage:

Harry Strunk Reservoir on Medicine Creek

Hugh Butler Reservoir on Red Willow Creek

Swanson Reservoir on the Republican River

## 4 Canal Systems

- Meeker-Driftwood Canal
- Red Willow Canal
- Bartley Canal
- Cambridge Canal

156 miles of Main Canal

112 miles of Buried Pipe Laterals

157 miles of Surface and Sub-surface Drains

FCID serve 45,669 acres

Total canal diversion capacity = 829 cfs

Natural Flow Permits granted 512 cfs

(priority dates range from 1890 to 1987)

Storage user permits for 143,000 A.F. of storage water (A full supply is considered 14 inches per acre)

2012 Water toll = \$33.00 per acre for 8 inches

2013 Water Toll= \$49.50 per acre-foot plus \$10.00 per acre

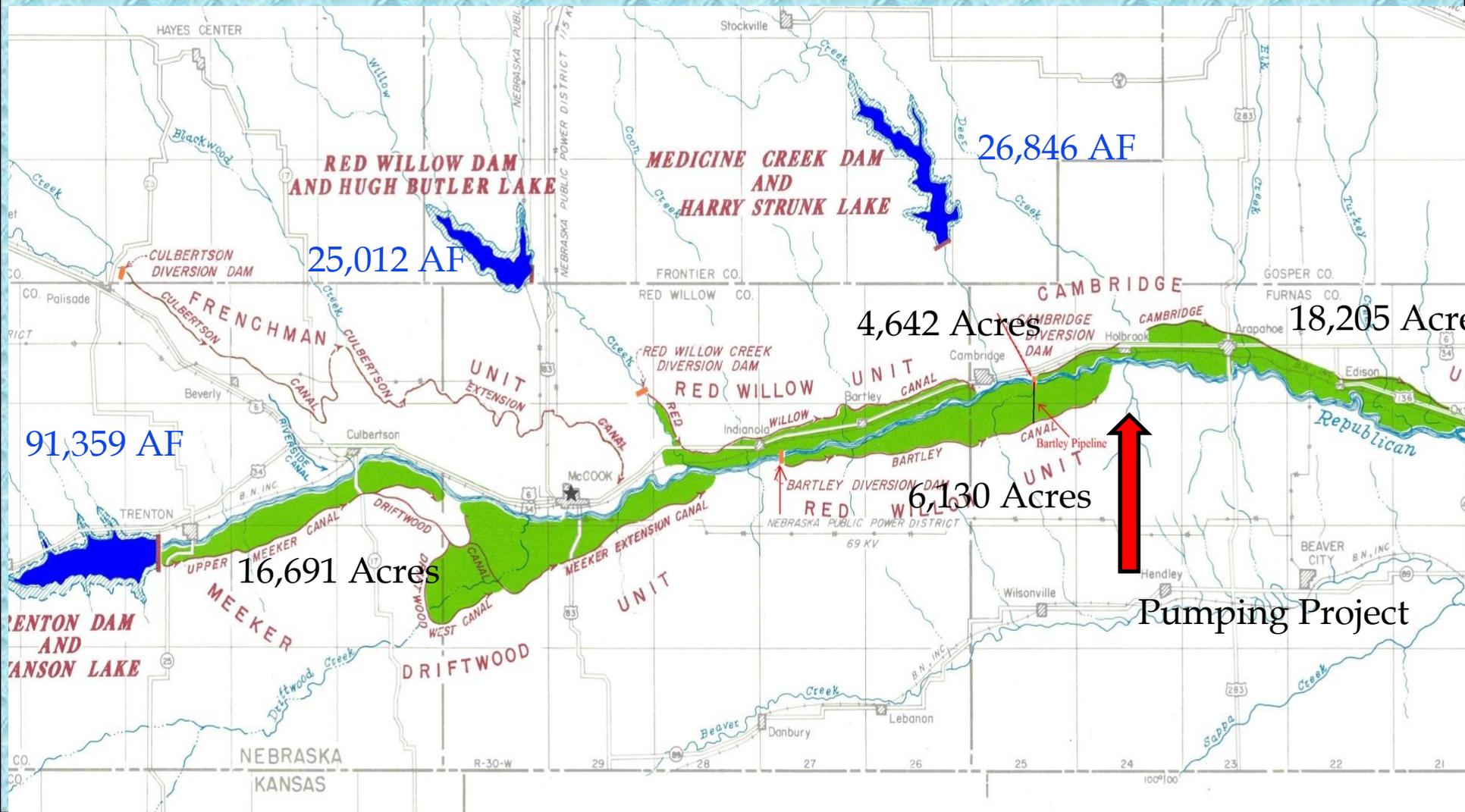
Meeker Driftwood Canal allocated 1.5 inches per acre

Cambridge Canal allocated 2 inches per acre

Bartley and Red Willow Canal = 0 inches

*In addition each irrigated acre is taxed \$10.00 in occupation tax by the State, this money goes to the groundwater Districts (NRDs)*

# Frenchman-Cambridge Irrigation District



RED WILLOW DAM AND HUGH BUTLER LAKE

25,012 AF

MEDICINE CREEK DAM AND HARRY STRUNK LAKE

26,846 AF

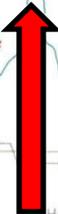
91,359 AF

16,691 Acres

4,642 Acres

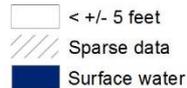
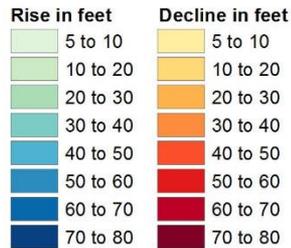
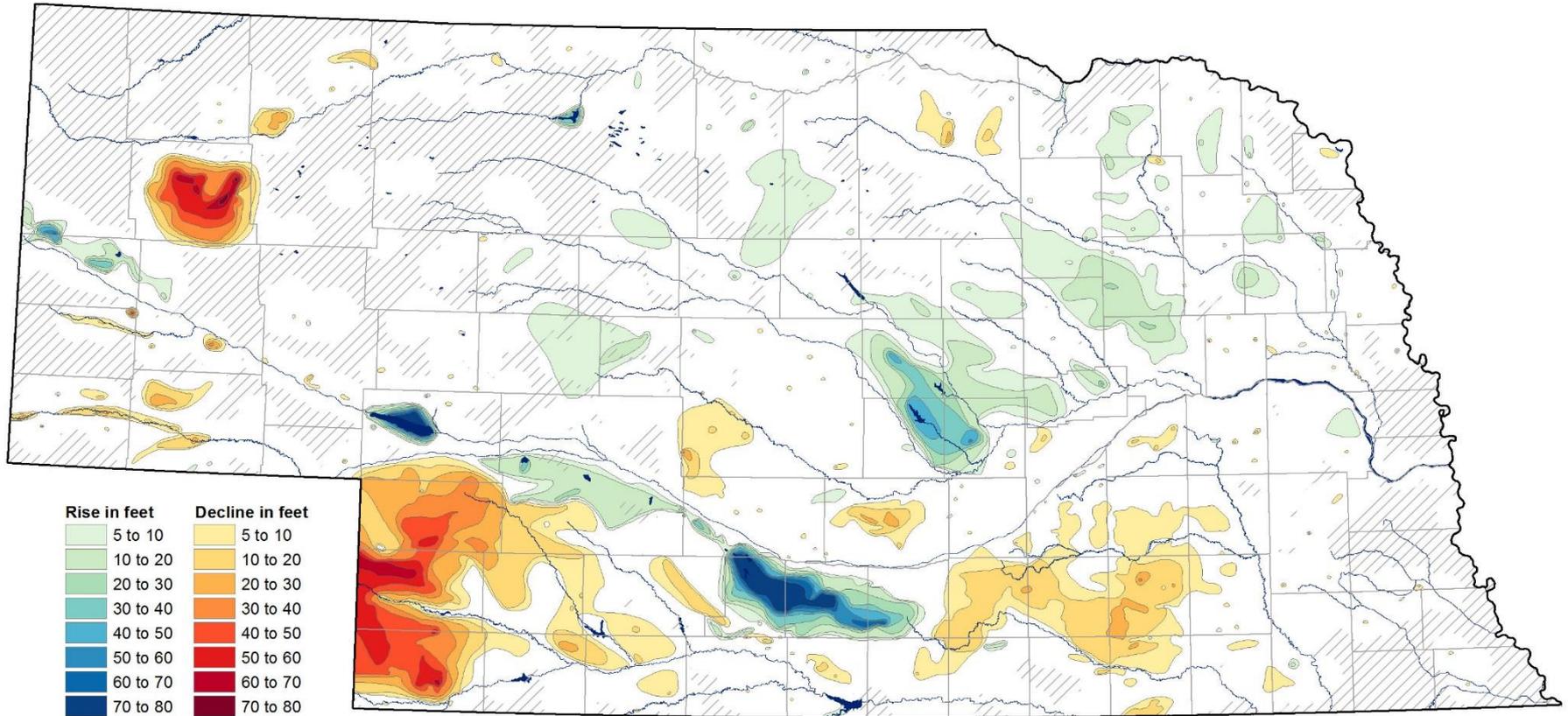
6,130 Acres

18,205 Acres



Pumping Project

# Groundwater-level Changes in Nebraska - Predevelopment to Spring 2012



(1 foot = .3048 meters)

CONSERVATION AND SURVEY DIVISION (<http://snr.unl.edu/csd>)  
 School of Natural Resources (<http://snr.unl.edu>)  
 Institute of Agriculture and Natural Resources  
 University of Nebraska-Lincoln

Aaron Young, Water Resources Coordinator, CSD  
 Mark Burbach, Water Levels Program Supervisor, CSD  
 Les Howard, GIS Manager, CSD  
 Jesse Korus, Survey Geologist, CSD

U.S. Geological Survey  
 Nebraska Water Science Center

U.S. Bureau of Reclamation  
 Kansas-Nebraska Area Office

Nebraska Natural Resources Districts

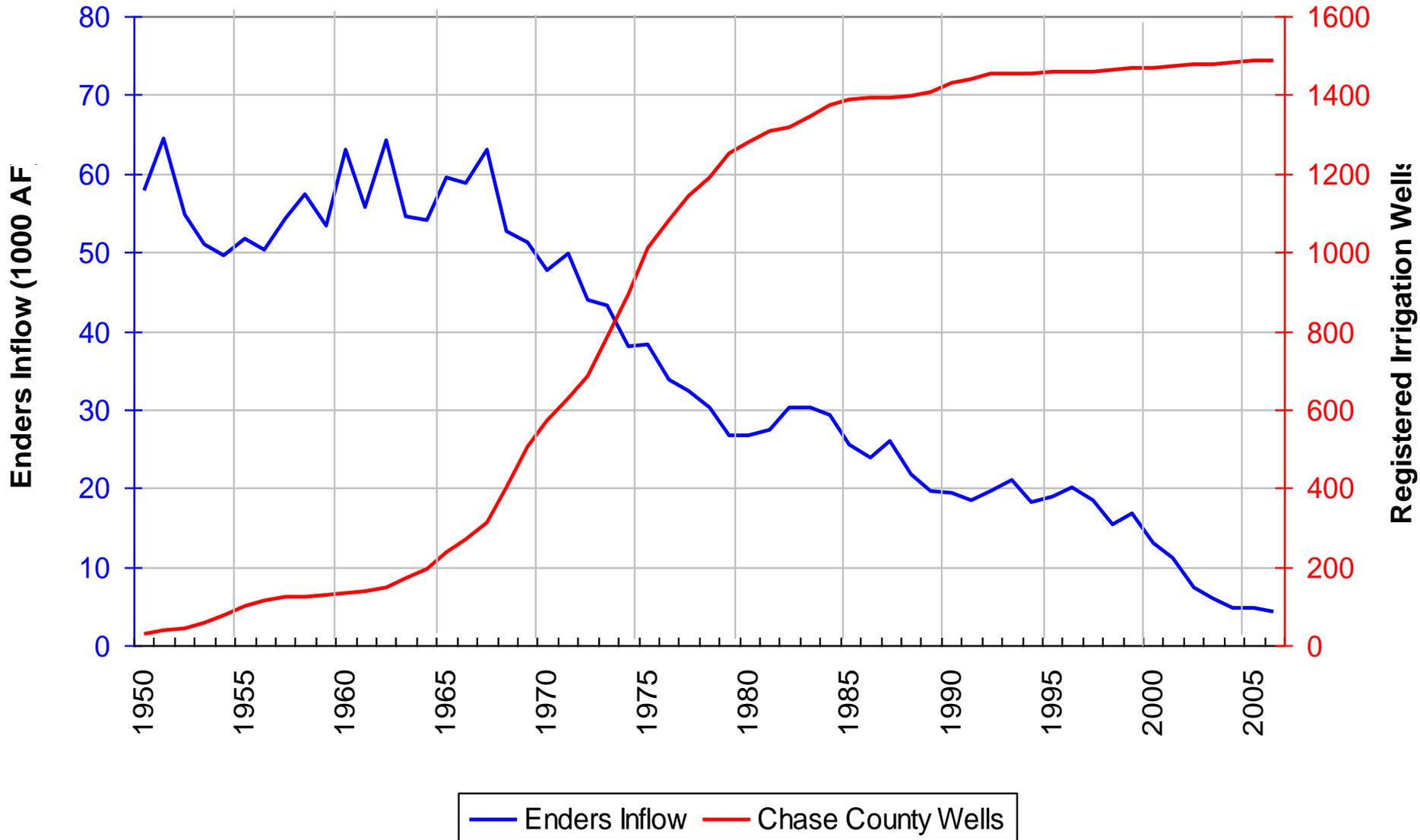
Central Nebraska Public Power and Irrigation District

School of Natural Resources  
 Institute of Agriculture and Natural Resources  
 University of Nebraska-Lincoln

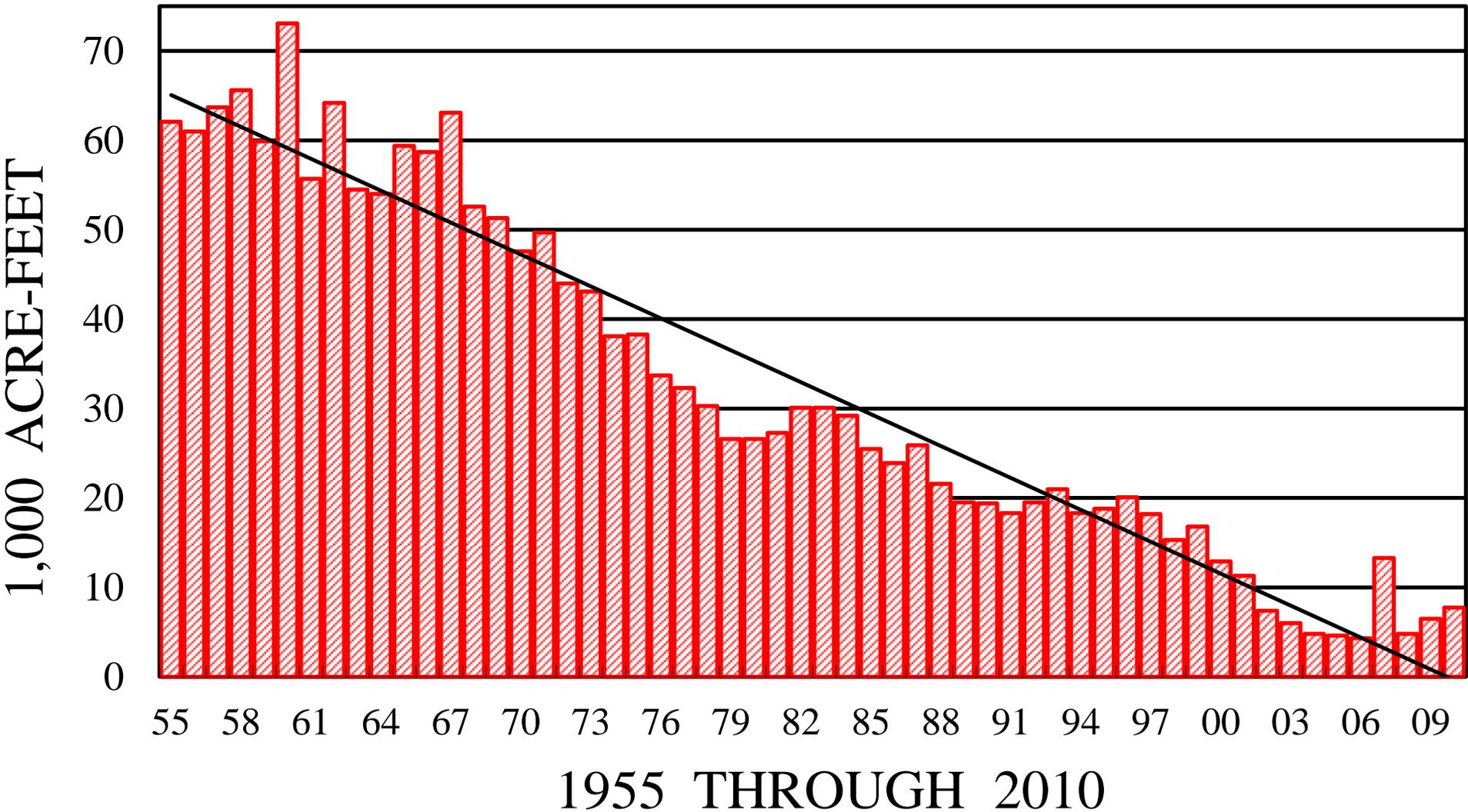
The University of Nebraska-Lincoln does not discriminate based on gender, age, disability, race, color, religion, marital status, veteran's status, national or ethnic origin, or sexual orientation.

December 2012

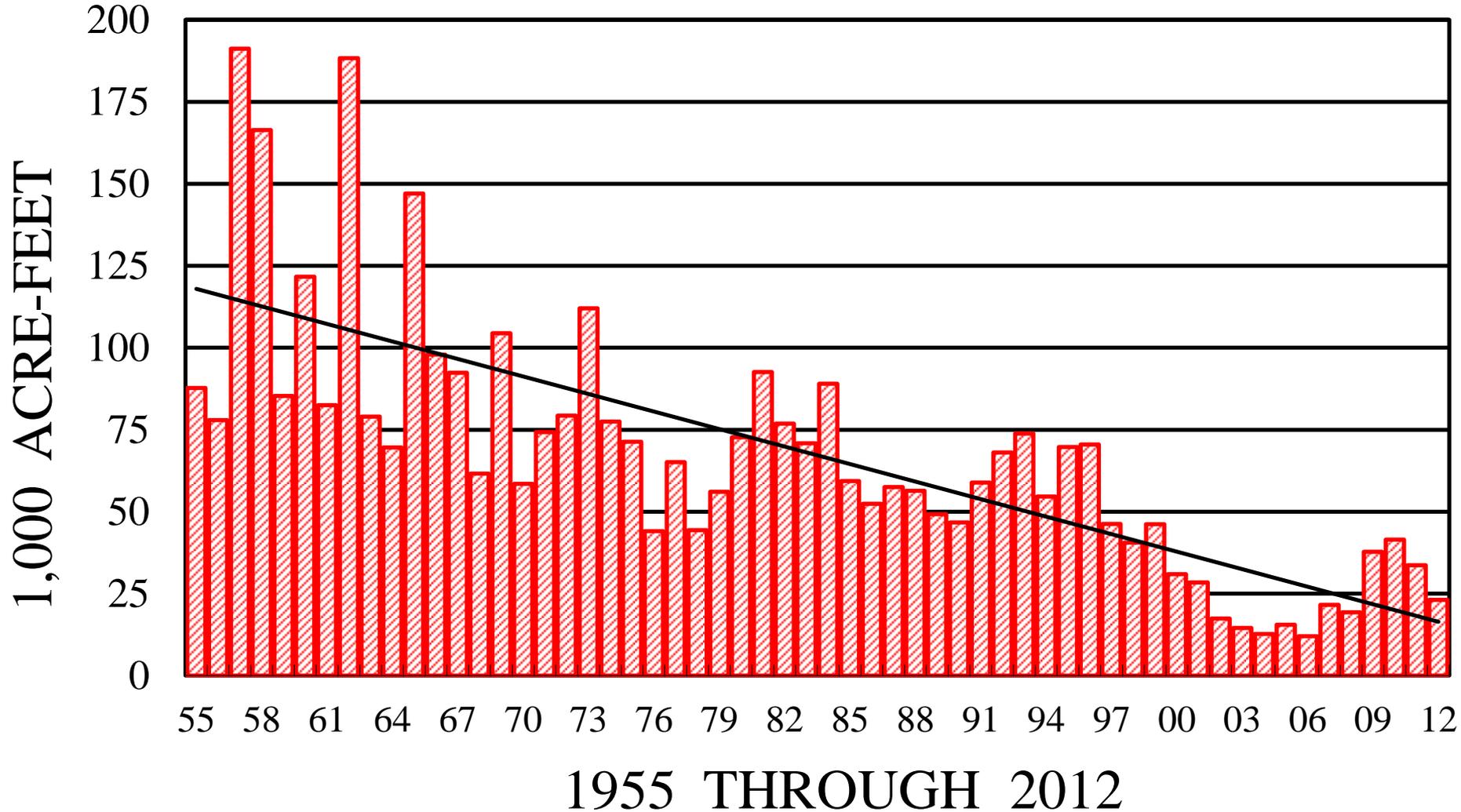
# Computed Inflow into Enders and Number of Wells by Completion Date in Chase County, NE



# ENDERS DAM & RESERVOIR YEARLY HISTORICAL INFLOW

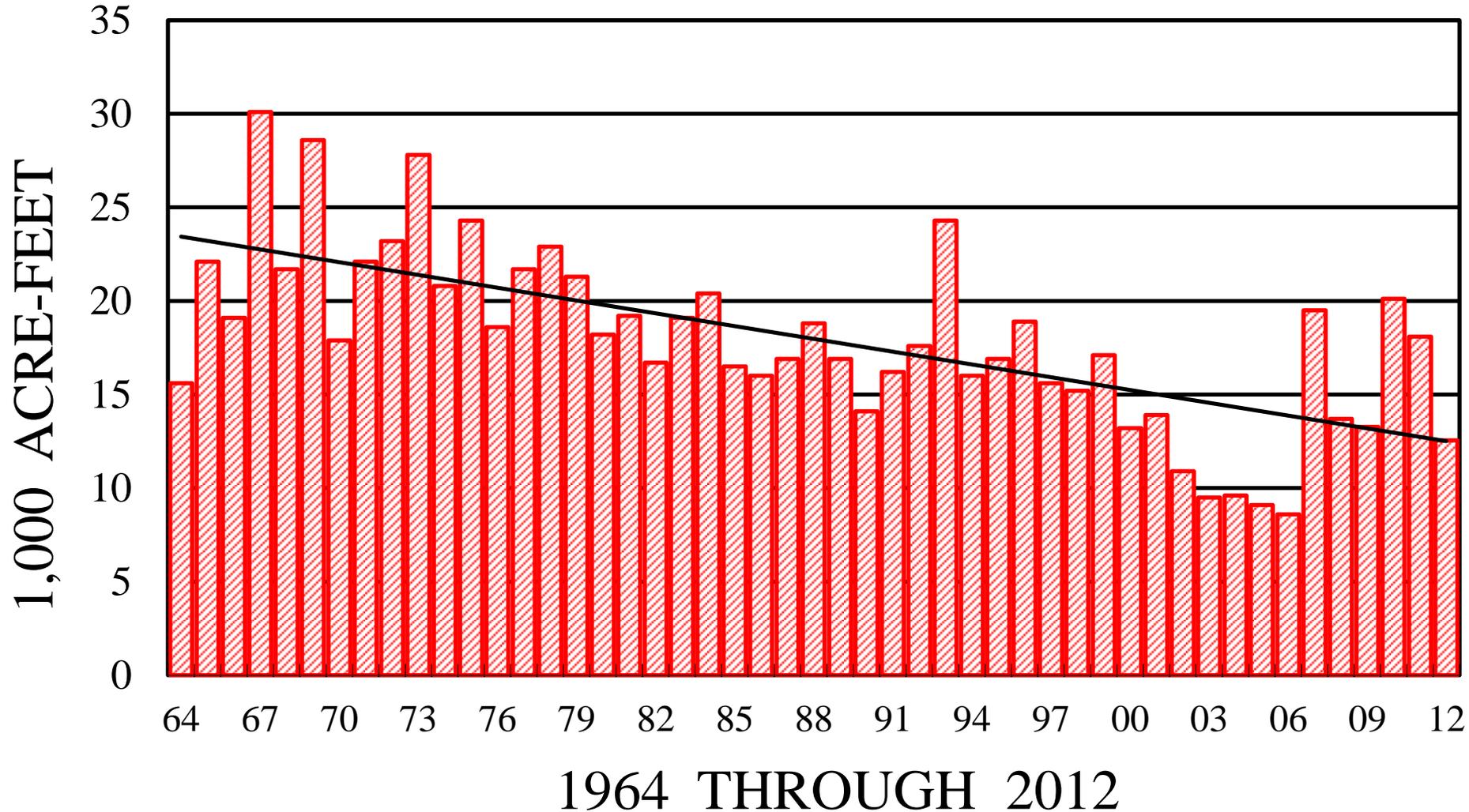


# TRENTON DAM YEARLY HISTORICAL INFLOW



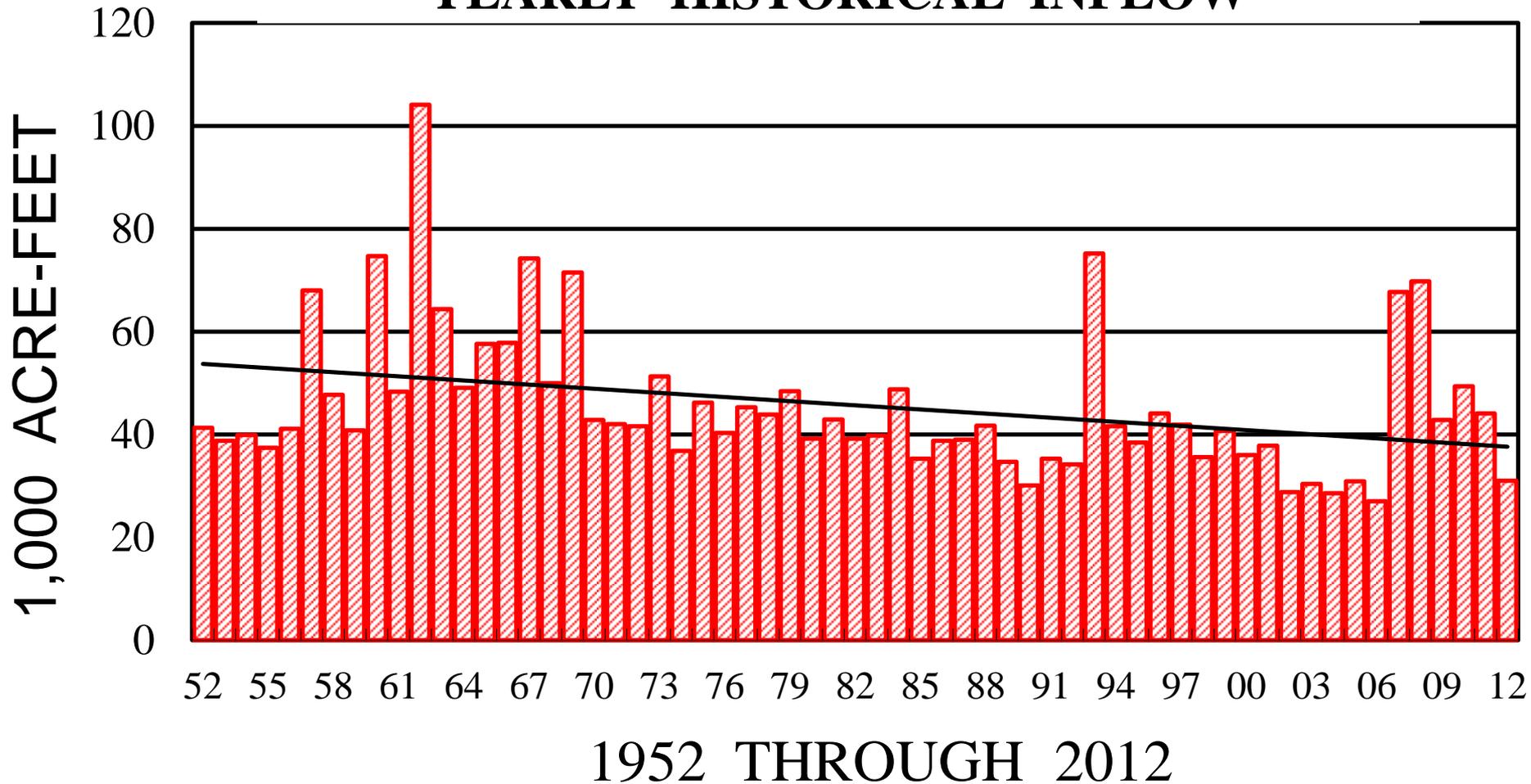
# RED WILLOW DAM and HUGH BUTLER LAKE

## YEARLY HISTORICAL INFLOW



# MEDICINE CREEK DAM and HARRY STRUNK LAKE

## YEARLY HISTORICAL INFLOW



# FRENCHMAN-CAMBRIDGE IRRIGATION DISTRICT

## Water Conservation

Open ditch laterals converted to buried pipe laterals  
1978 – 1985      \$5.2 million dollar Reclamation loan

Surge valve conversions 1980s and 1990s (Federal  
cost share dollars)

Conversion from flood irrigation to center pivots  
(Landowner expense)

# FRENCHMAN-CAMBRIDGE IRRIGATION DISTRICT

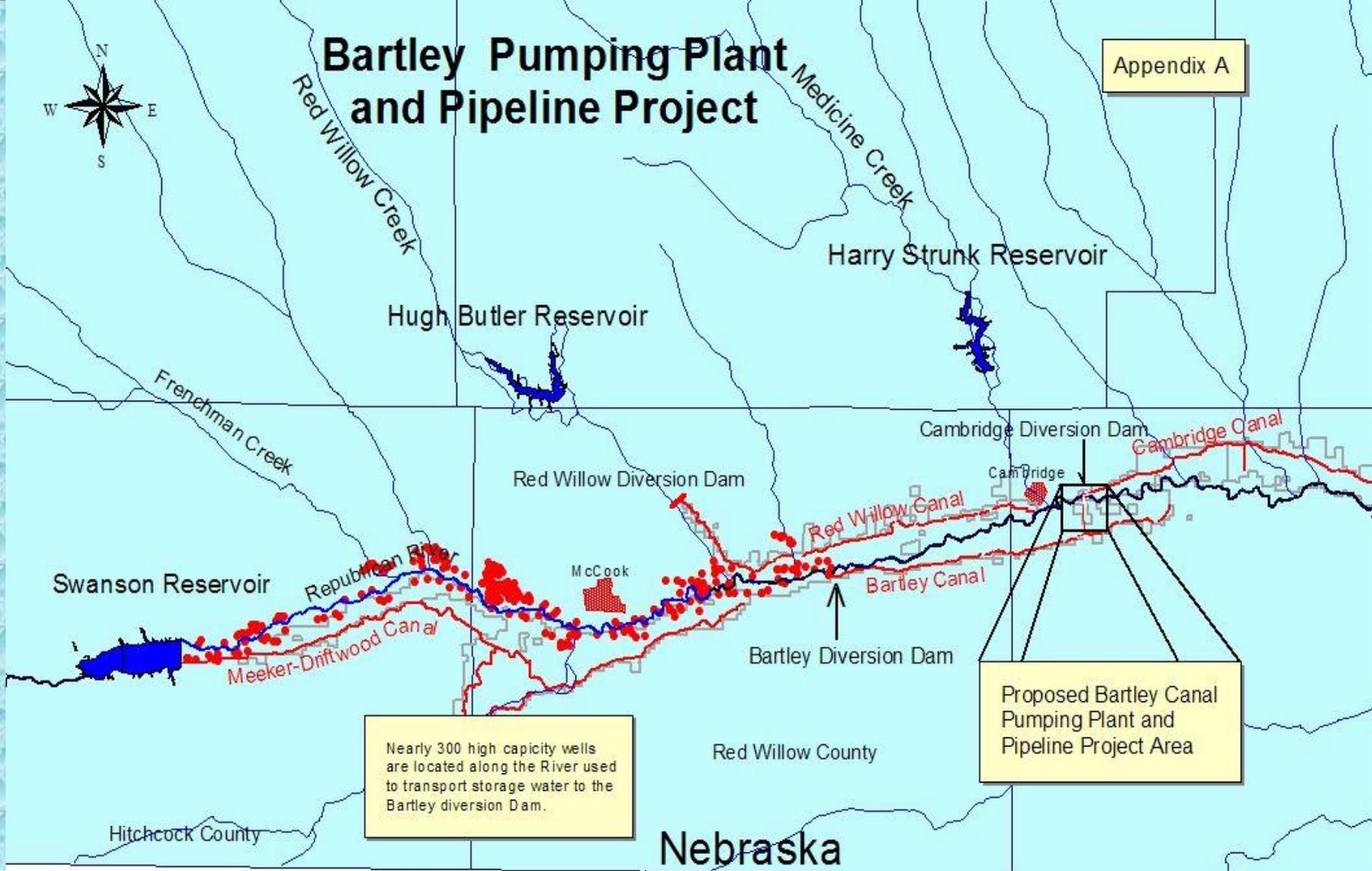
## Water Conservation

FCID has been awarded 3 federal grants totaling 2 million dollars.

- Bartley Pumping Station and Pipeline Project
- Cambridge Canal Automation
- Bartley Pumping Station Automation

# Bartley Pumping Plant and Pipeline Project

Appendix A



Nearly 300 high capacity wells are located along the River used to transport storage water to the Bartley diversion Dam.

Proposed Bartley Canal Pumping Plant and Pipeline Project Area

Nebraska  
Kansas



- High Capacity Groundwater wells
- ~ Republican River

# FRENCHMAN-CAMBRIDGE IRRIGATION DISTRICT

## WaterSMART Grant

Total Estimated Project Cost = \$1,263,000

50% Federal Dollars

50% FCID Dollars and In-kind Services

*Water is Life*

# FRENCHMAN-CAMBRIDGE IRRIGATION DISTRICT

WaterSMART Grant

The Project Consists of:

A pumping station located on the south end of the Cambridge Diversion Dam, two miles of 27 inch pvc pipe.

*Water is Life*









# FRENCHMAN-CAMBRIDGE IRRIGATION DISTRICT

WaterSMART Grant

Total Estimated Water Savings:

4,660 acre-feet of conserved water in Swanson Reservoir

This is water that would have been lost in transit from the Swanson Reservoir to Bartley Diversion Dam mostly to groundwater pumping

*Water is Life*

# FRENCHMAN-CAMBRIDGE IRRIGATION DISTRICT

## WaterSMART Grant

FCID has also been awarded a \$627,621 WaterSMART grant to automate the headgate and several check structures on the Cambridge Canal

This system will include a SCADA system so these sites can be remotely operated

*Water is Life*





# FRENCHMAN-CAMBRIDGE IRRIGATION DISTRICT

WaterSMART Grant

In addition to these 2 WaterSMART grants FCID was awarded a \$191,290 Nebraska-Kansas Area Office grant to automate the Bartley pumping station and all the check structures downstream of the outfall on the Bartley Canal

*Water is Life*

# FRENCHMAN-CAMBRIDGE IRRIGATION DISTRICT

## Swanson Reservoir Pump Back Project

Presented to DNR and Reclamation on April 20, 2012

*Water is Life*

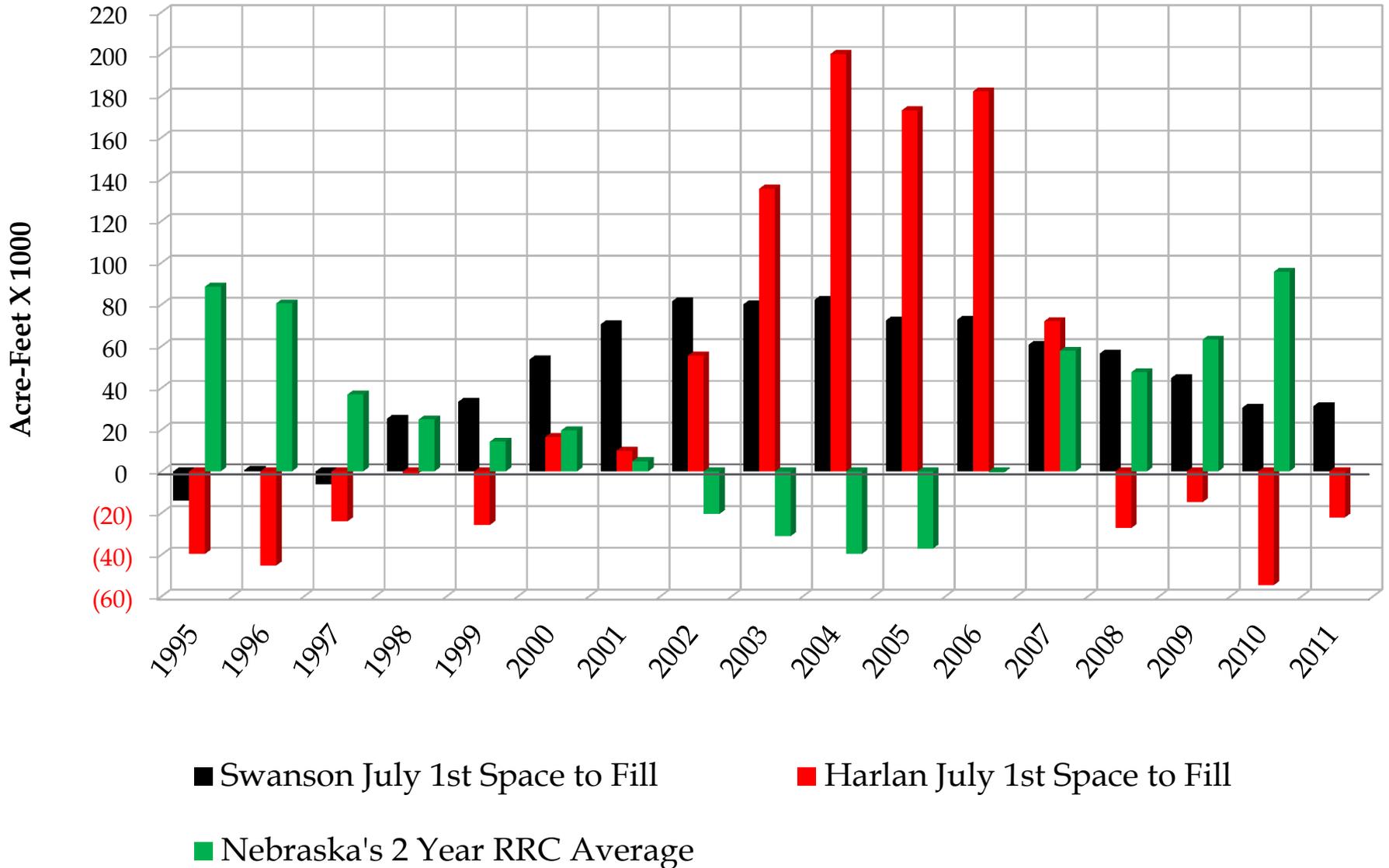
# FRENCHMAN-CAMBRIDGE IRRIGATION DISTRICT

## PROJECT GOALS

1. Provide additional Water for FCID Irrigators
2. Provide water for Compact Compliance
3. Provide for 3 year averaging during water short years as allowed in the FFS

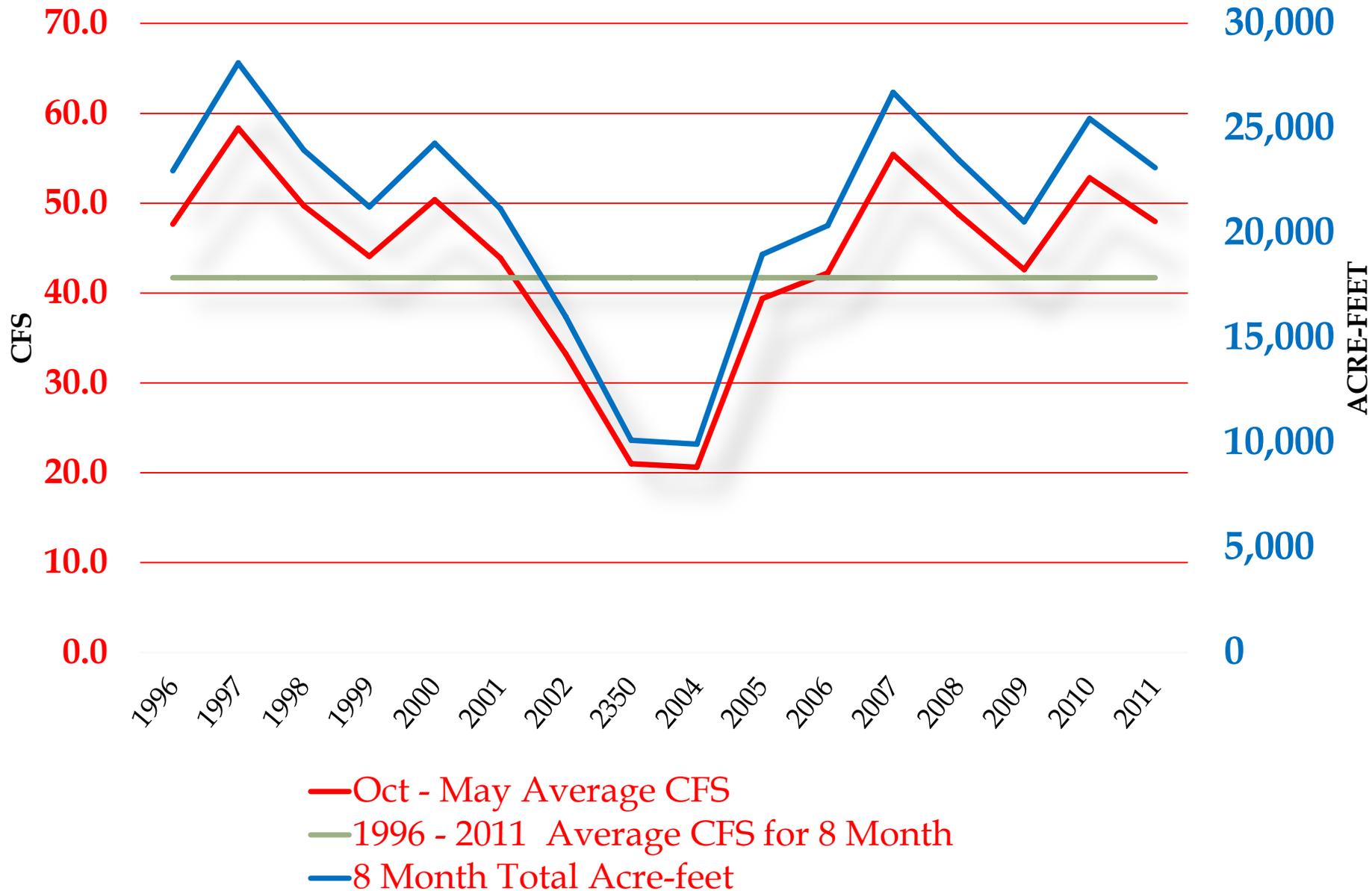
*Water is Life*

# Swanson Res. Vs Harlan County Res. vs Nebraska's 2 year RRC Average (Space to fill)

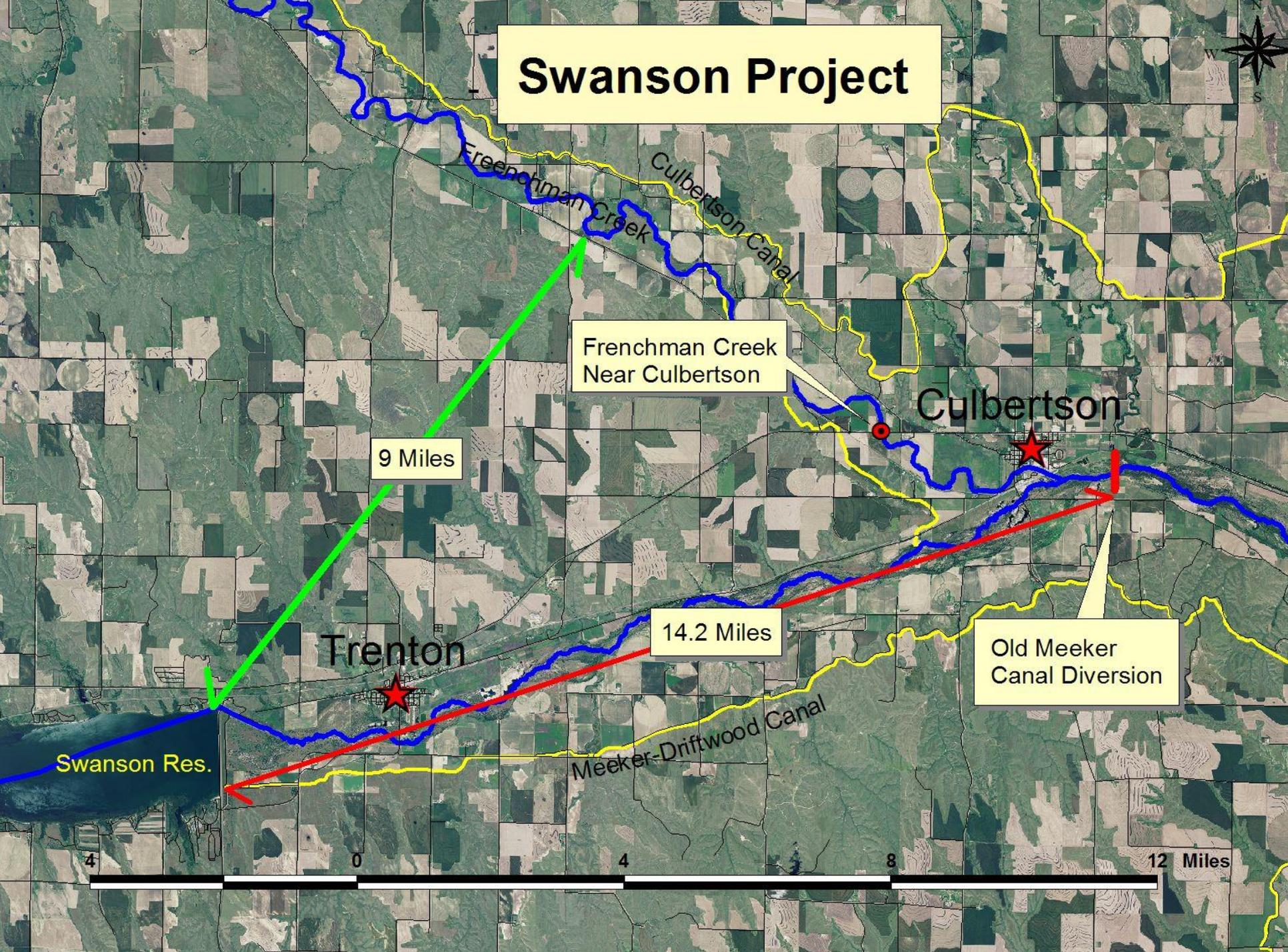


# 06835500 Frenchman Creek at Culbertson

## Oct - May Average CFS



# Swanson Project



# FRENCHMAN-CAMBRIDGE IRRIGATION DISTRICT

## FCID WOULD PROVIDE:

1. A block of storage space in Swanson Reservoir set aside for Compact compliance.
  2. (size to be determined)
3. Operate and maintain pipeline and pumping Station

*Water is Life*

# Questions

