

"Water is Life"



Frenchman Cambridge Irrigation District

Water Users Meeting

March 19, 2019

Brad Edgerton, Manager

"Water is Life"



Frenchman Cambridge Irrigation District

Dale Cramer, President

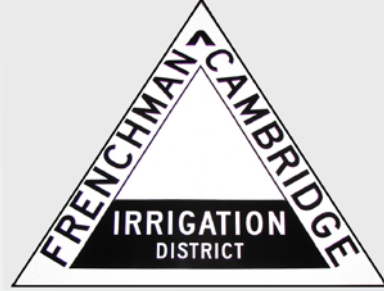
Todd Lichty, Vice President

Duane Vorderstrasse, Secretary / Treasure

FCID Employs 11 Fulltime Employees

1 Part-time Employee

"Water is Life"



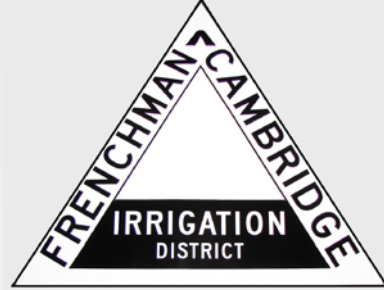
Background:

FCID was Established in 1946.

First Irrigation District organized under the Missouri Basin Plan approved by congress in 1944

Background:

"Water is Life"

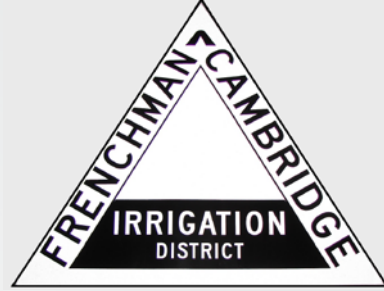


FCID has three Reclamation Reservoirs with a total irrigation pool capacity of 143,000 acre-feet.

Exclusive Flood Control Pool = 235,747 AF

Surcharge Flood Pool = 290,144 AF

"Water is Life"



Background:

Four Reclamation Canal Systems serving
45,669 acres.

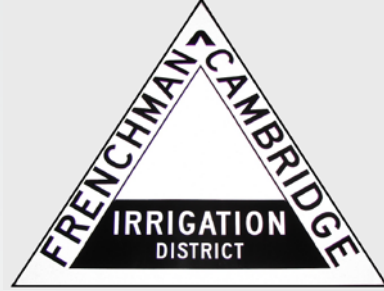
Meeker-Driftwood Canal serves 16,691 acres

Red Willow Canal serves 4,642 acres

Bartley Canal serves 6,130

Cambridge Canal serves 18,205

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Background:

Four Reclamation Canal Systems with:

156 miles of main canal

100 miles of buried pipe laterals

157 miles of surface and sub-surface drains

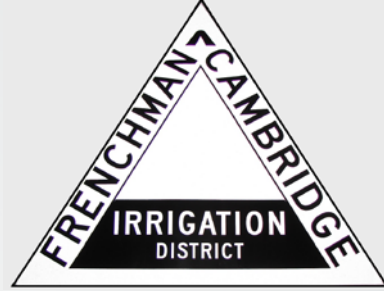
Total Canal Diversion
Capacity = 829 cfs

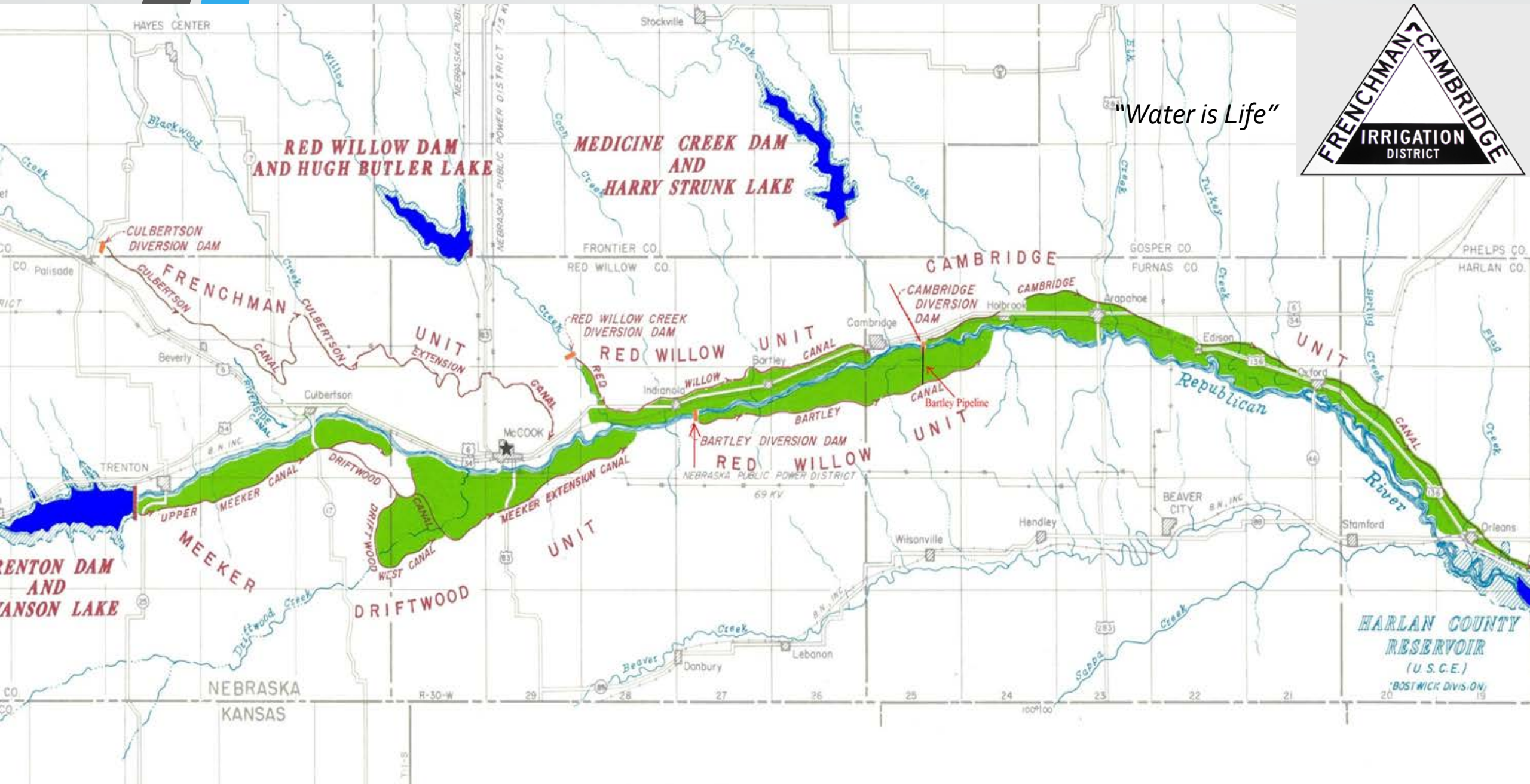
Natural Flow Permits
granted 512 cfs

Priority Dates Range
From 1890 to 1987

Serve over 400
Customers

"Water is Life"





"Water is Life"

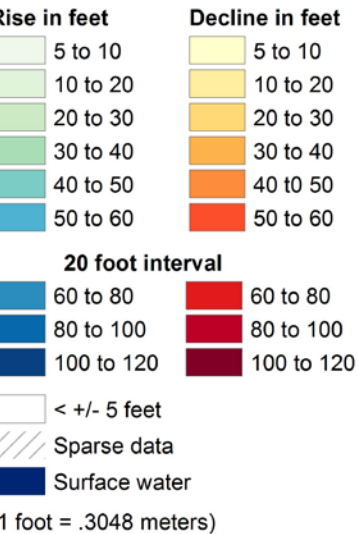
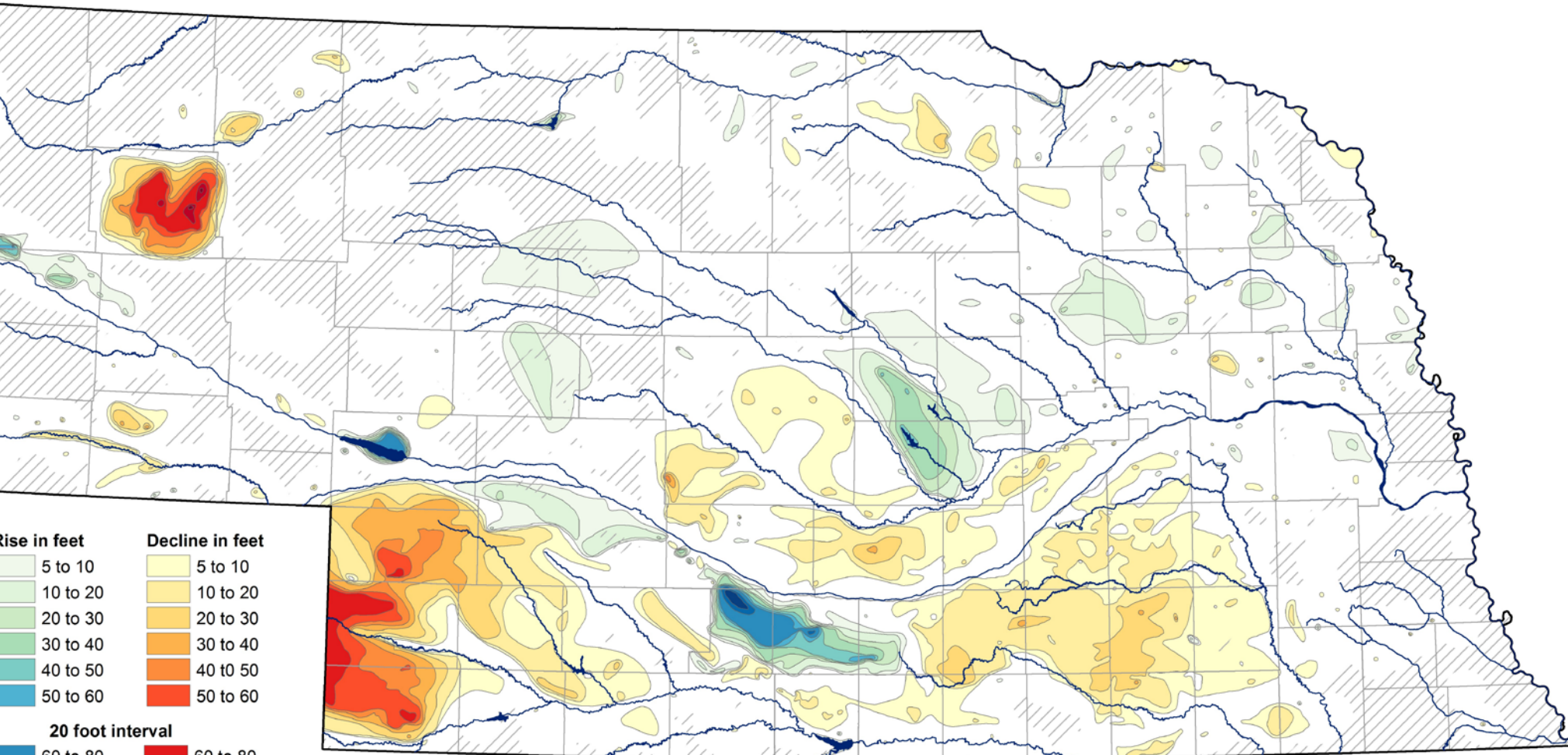


HARLAN COUNTY RESERVOIR (U.S.C.E.) BOSTWICK DIVISION

Groundwater-Level Changes in Nebraska - Predevelopment to Spring 2017



"Water is Life"



For an explanation of information presented on this map, see the 2017 Nebraska Statewide Groundwater-Level Monitoring Report, available for download at go.unl.edu/groundwater

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

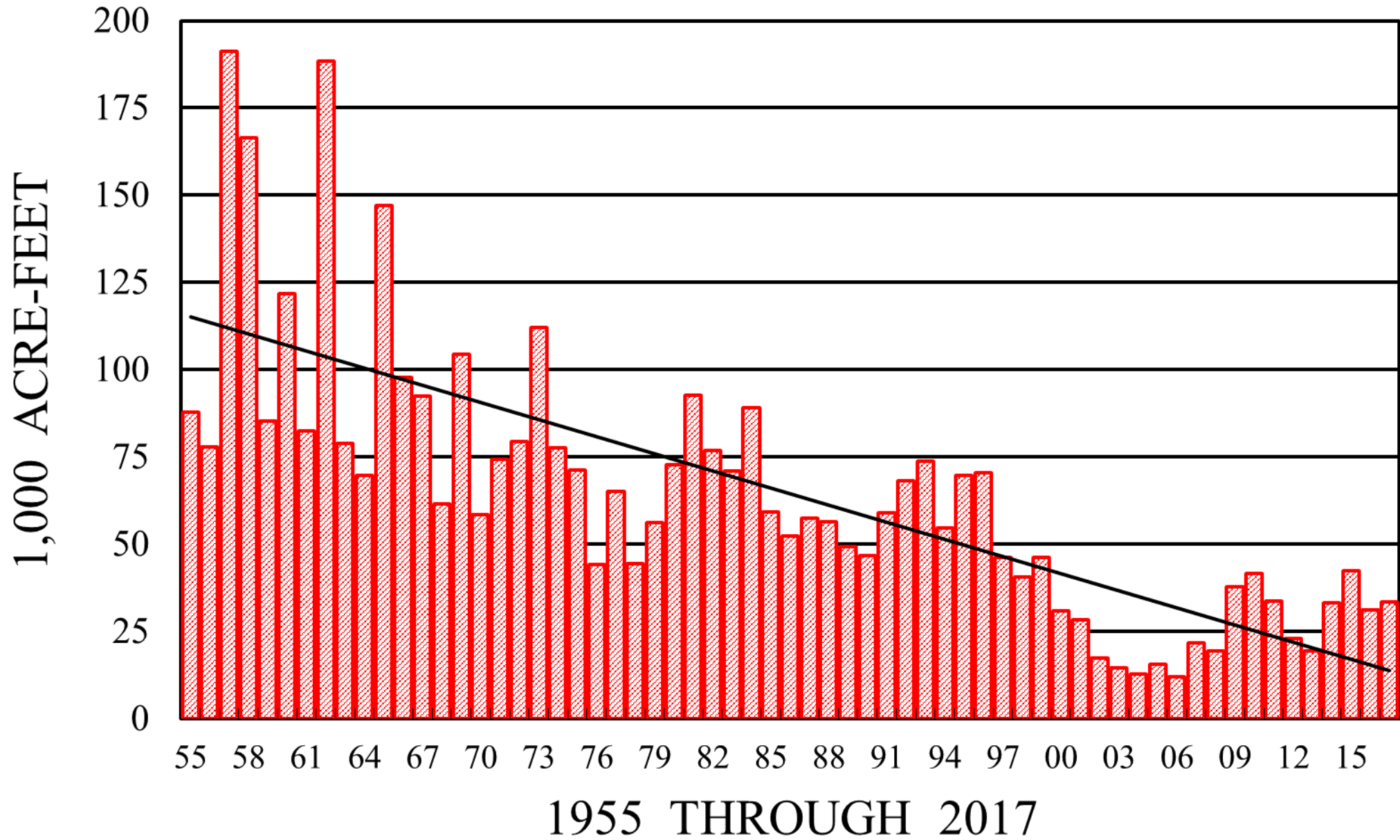
Aaron Young, Survey Geologist, CSD
 Mark Burbach, Water Levels Program Supervisor, CSD
 Les Howard, GIS Manager, CSD

U.S. Geological Survey
 Nebraska Water Science Center

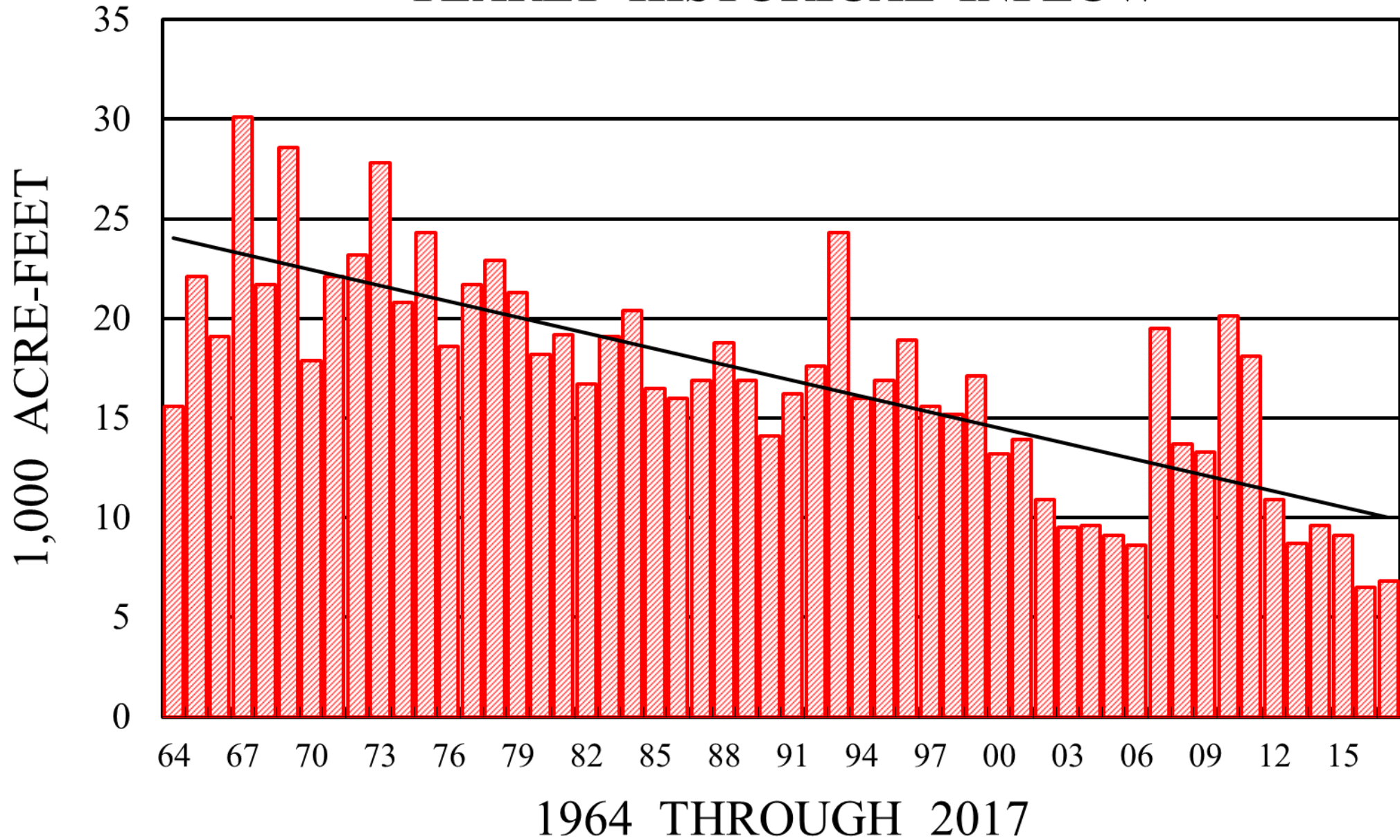
U.S. Bureau of Reclamation
 Kansas-Nebraska Area Office

Nebraska Natural Resources Districts
 Central Nebraska Public Power and
 Irrigation District

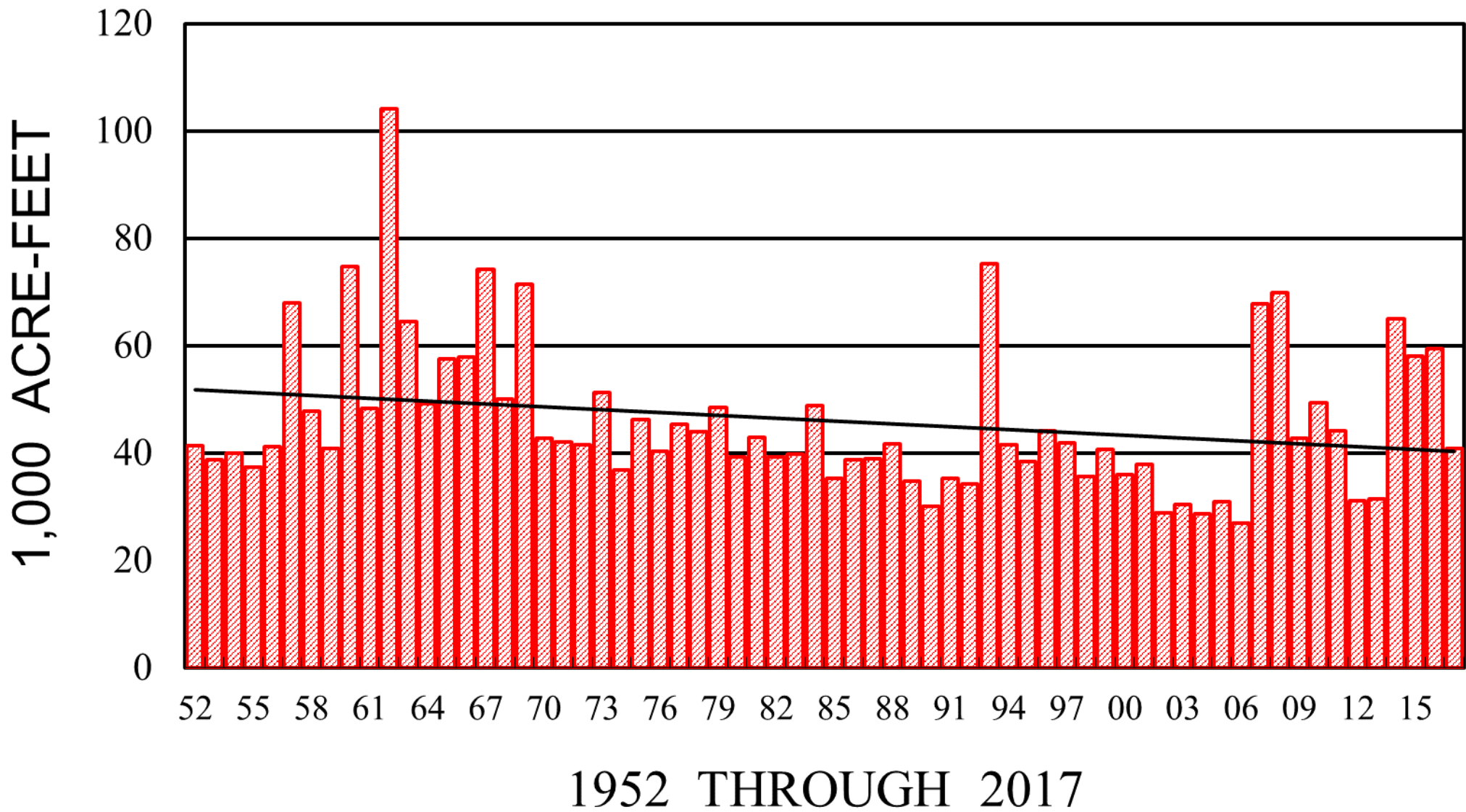
TRENTON DAM YEARLY HISTORICAL INFLOW



RED WILLOW DAM and HUGH BUTLER LAKE YEARLY HISTORICAL INFLOW



MEDICINE CREEK DAM and HARRY STRUNK LAKE YEARLY HISTORICAL INFLOW

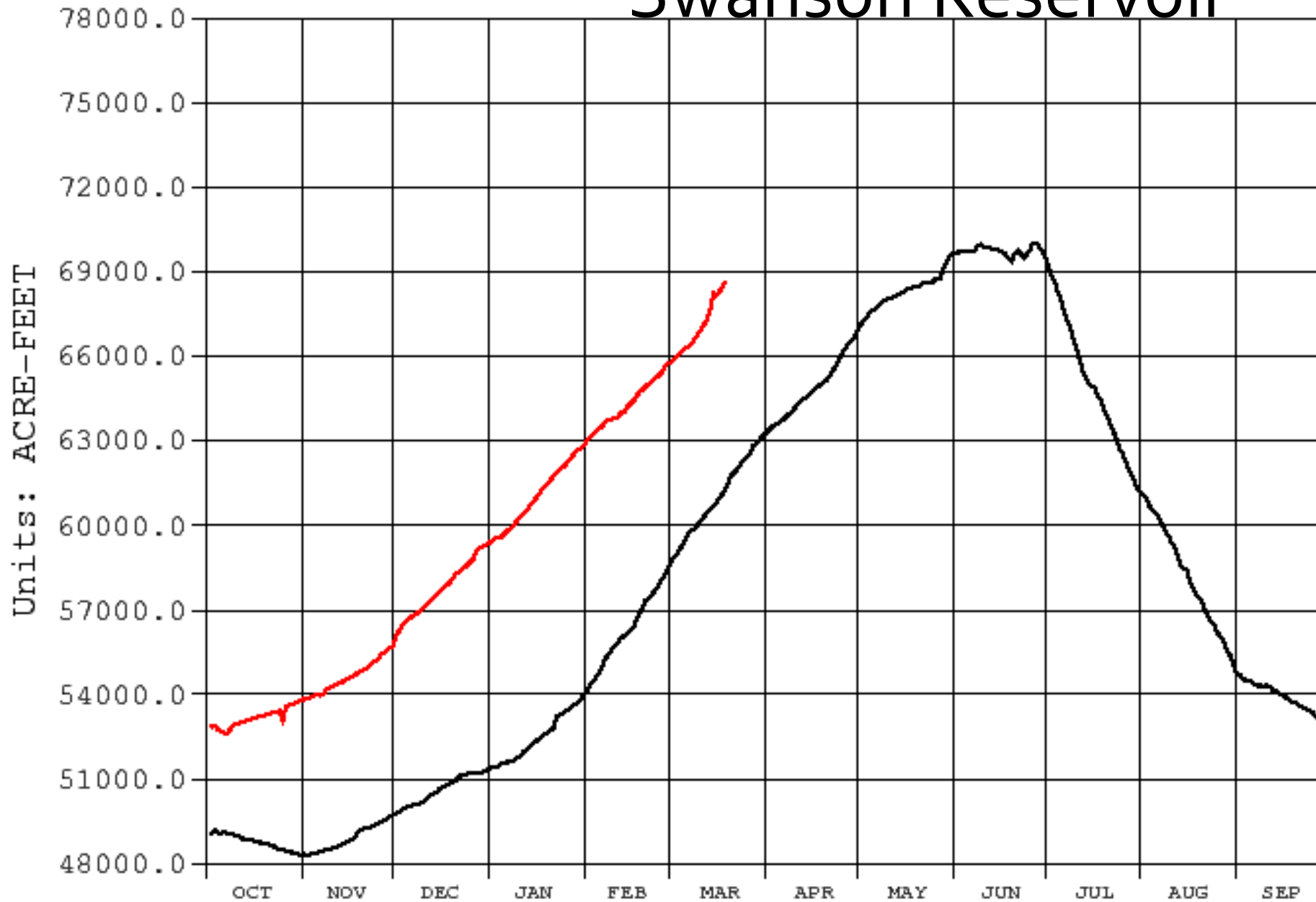


Frenchman Cambridge 2019 Storage Water Supply

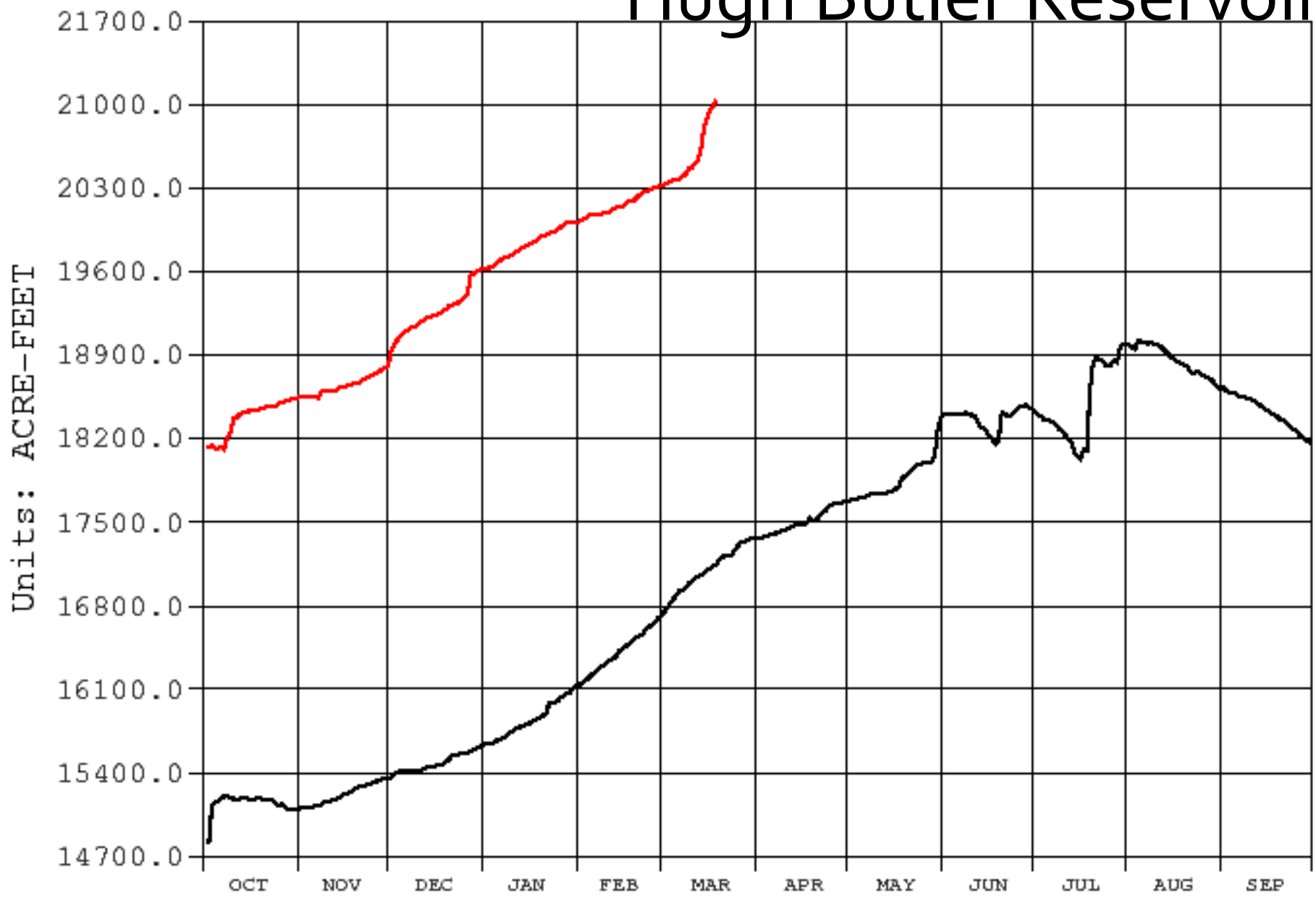
Reservoir Content / Irrigation Supply

| Reservoirs 2019 | Swanson | | Hugh Butler | | Harry Strunk | | Total AF |
|--|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| | Elevation | Acre-Feet | Elevation | Acre-Feet | Elevation | Acre-Feet | AF |
| Top of Irrigation Pool | 2752.00 | 110,175 | 2581.80 | 36,224 | 2366.10 | 34,647 | 181,046 |
| FCID Contracted Shut Off Elevation/Content AF | 2725.00 | 18,958 | 2561.00 | 11,212 | 2343.00 | 7,897 | 38,067 |
| <i>FCID Contracted Irrigation Pool Capacity at 100% Full</i> | 27.00 | 91,217 | 20.80 | 25,012 | 23.10 | 26,750 | 142,979 |
| Current Elevation / Content (Acre-Feet) | 2742.31 | 68,655 | 2570.99 | 21040 | 2368.50 | 39,284 | 128,979 |
| % of Full Capacity | 62.3% | | 58.1% | | 113.4% | | 71.2% |
| <i>Current 2019 Irrigation Supply</i> | <i>Feet</i> | <i>A.F.</i> | <i>Feet</i> | <i>A.F.</i> | <i>Feet</i> | <i>A.F.</i> | <i>A.F.</i> |
| | 17.31 | 49,697 | 9.99 | 9,828 | 25.50 | 31,387 | 90,912 |
| Monday, March 18, 2019 | % Irr. Pool | 54.5% | % Irr. Pool | 39.3% | % Irr. Pool | 117.3% | 63.6% |
| Monday, March 19, 2018 | 2,740.37 | 61,567 | 2,567.49 | 17,181 | 2,363.89 | 30,808 | 109,556 |
| One Year Change in Storage (AF / Elevation) | 1.94 | 7,088 | 3.50 | 3,859 | 4.61 | 8,476 | 19,423 |

Swanson Reservoir



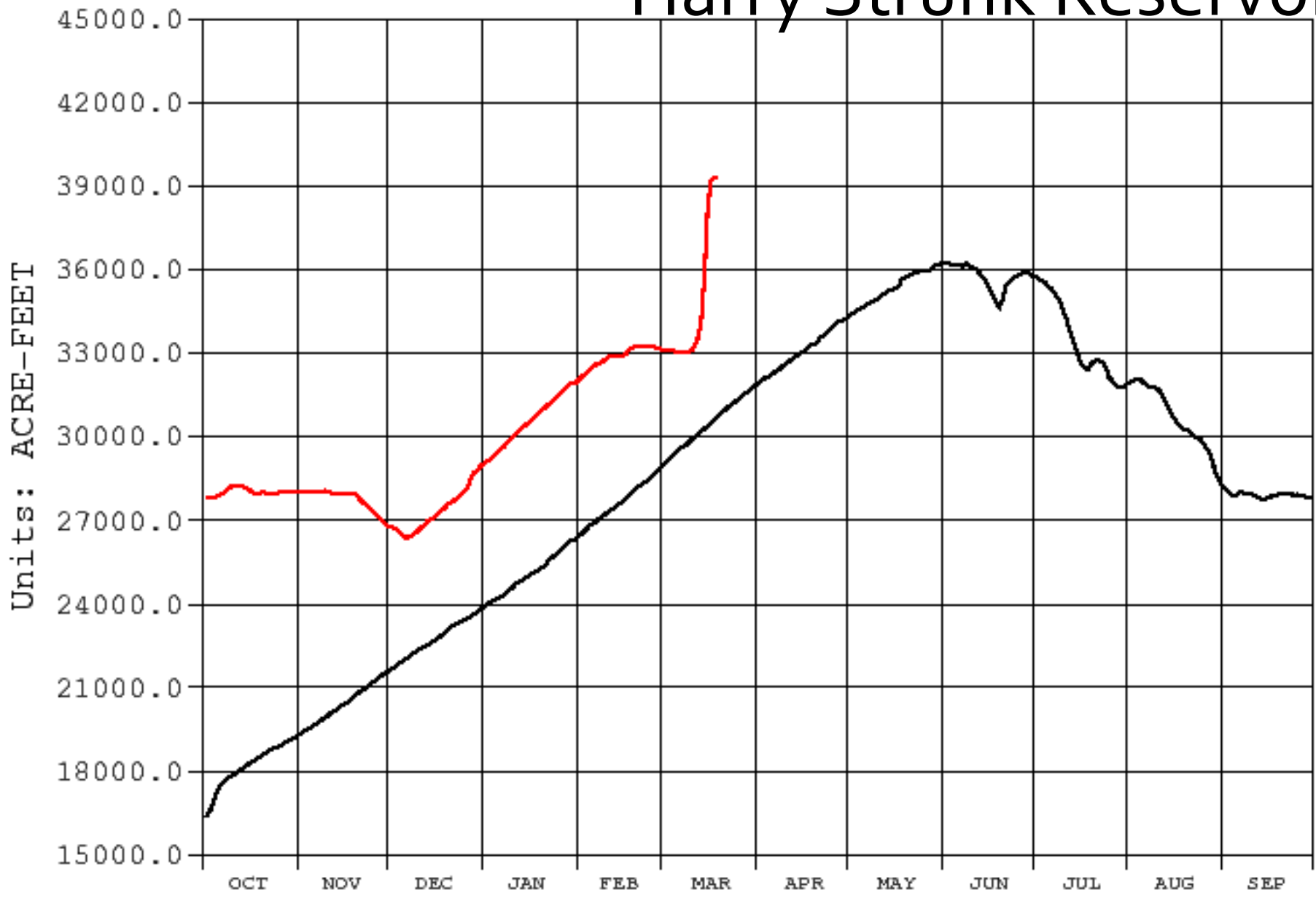
Hugh Butler Reservoir



HBNE Hugh Butler Lake (Red Willow Dam), NE
Reservoir Storage Content (acre-feet)

2018 2019

Harry Strunk Reservoir

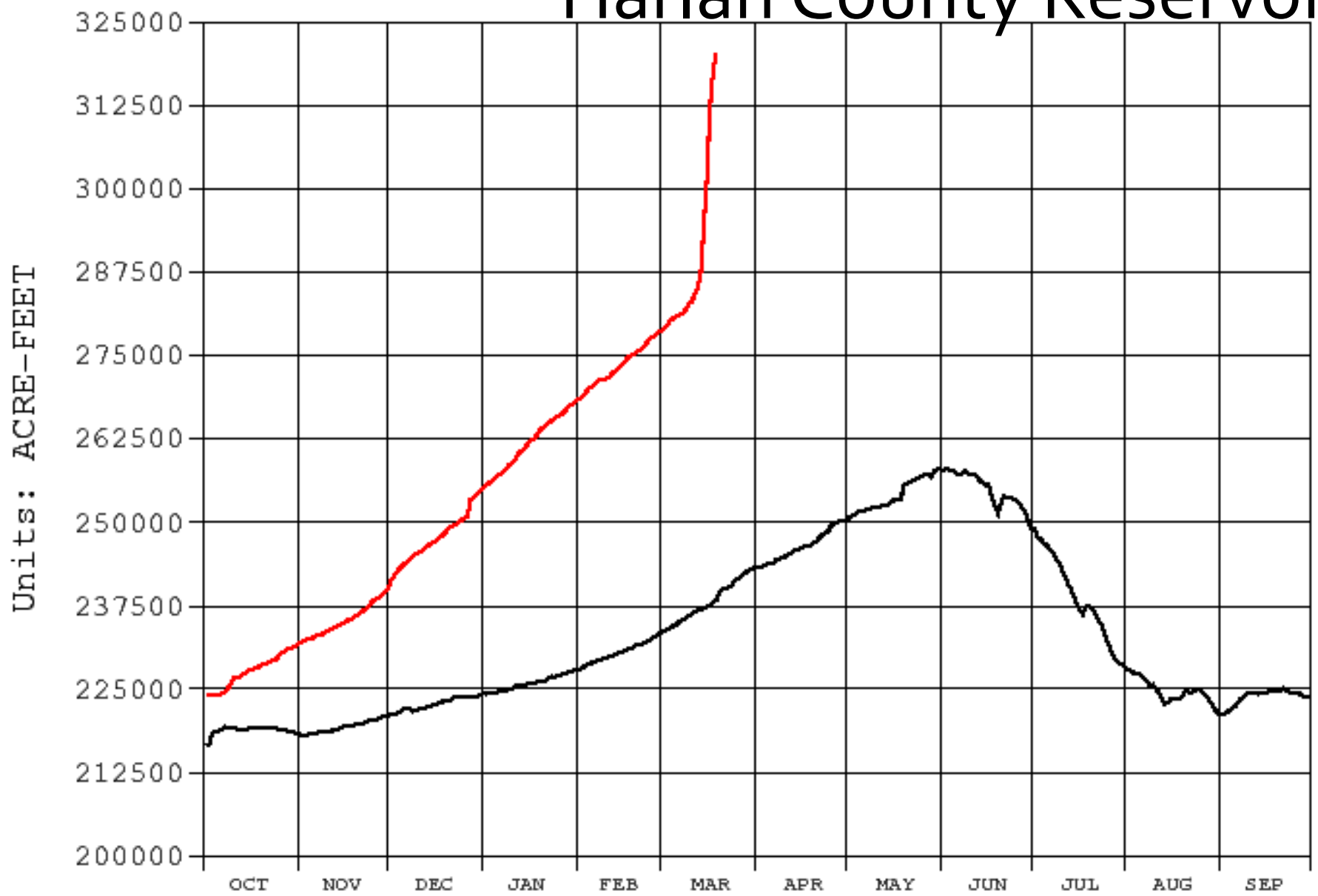


HSNE Harry Strunk Lake (Medicine Creek), NE
AF Reservoir Storage Content (acre-feet)

2018 2019

Plotted 03/18/2019 14:00

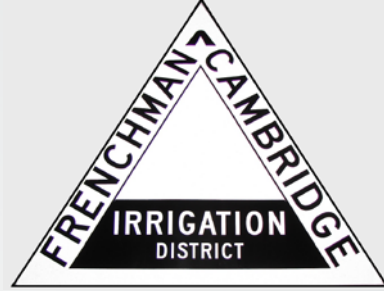
Harlan County Reservoir



HCNE Harlan County Dam, NE
AF Reservoir Storage Content (acre-feet)

2018 2019

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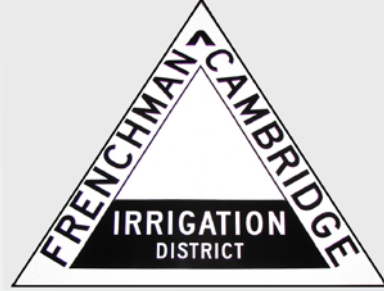
2019 Water Rates and Allocations

Meeker-Driftwood Canal is allocated 7 inches

\$32.00 per acre for 7 inches

An additional 1 inch will be sold at \$4.00 per inch if needed!

"Water is Life"

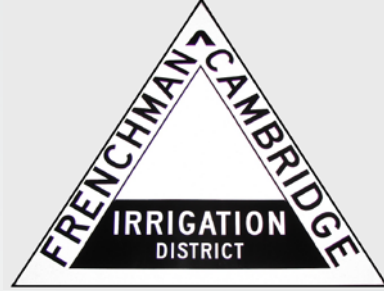


2019 Water Rates and Allocations

Red Willow Canal is allocated 8 inches

\$36.00 per acre for 8 inches

"Water is Life"



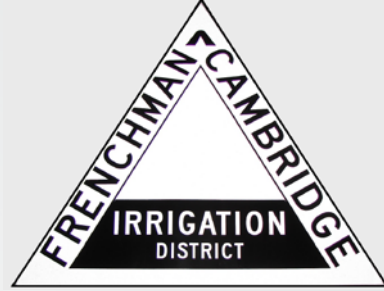
2019 Water Rates and Allocations

Bartley Canal is allocated 6 inches

\$28.00 per acre for 6 inches

River Water will be available early

"Water is Life"



2019 Water Rates and Allocations

Cambridge Canal is allocated 8 inches

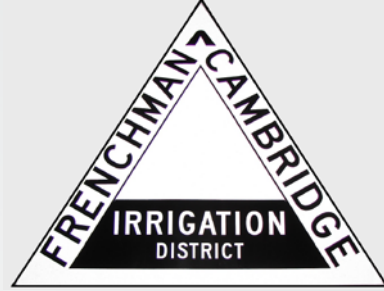
\$36.00 per acre for 8 inches

An additional 1 inch will be sold at \$4.00 per inch if needed!

River Water will be available early

FCID's Finances

"Water is Life"



CD = \$530,876

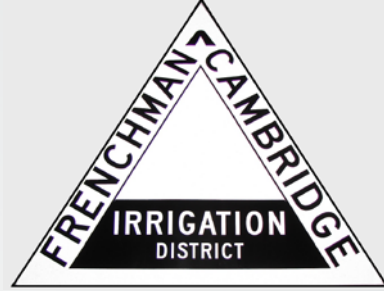
Federal Obligated Savings = \$264,656.29

Money Market Account = \$135,518.46

Checking = \$51,915.49

2019 Budget

"Water is Life"

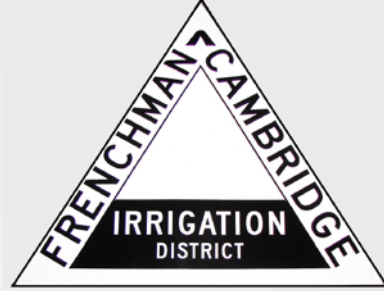


2019 Adopted Budget

\$1,533,279

| | |
|-------------------------------------|-----|
| Payroll and Employees Benefits..... | 55% |
| District O and M..... | 36% |
| Federal Obligations..... | 9% |

"Water is Life"



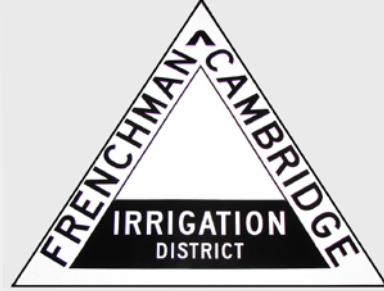
Water Conservation

1976 – 1985: All open ditch laterals were converted to buried pipe.

\$5.5 Million R and B Loan Program with Reclamation

Water Conservation

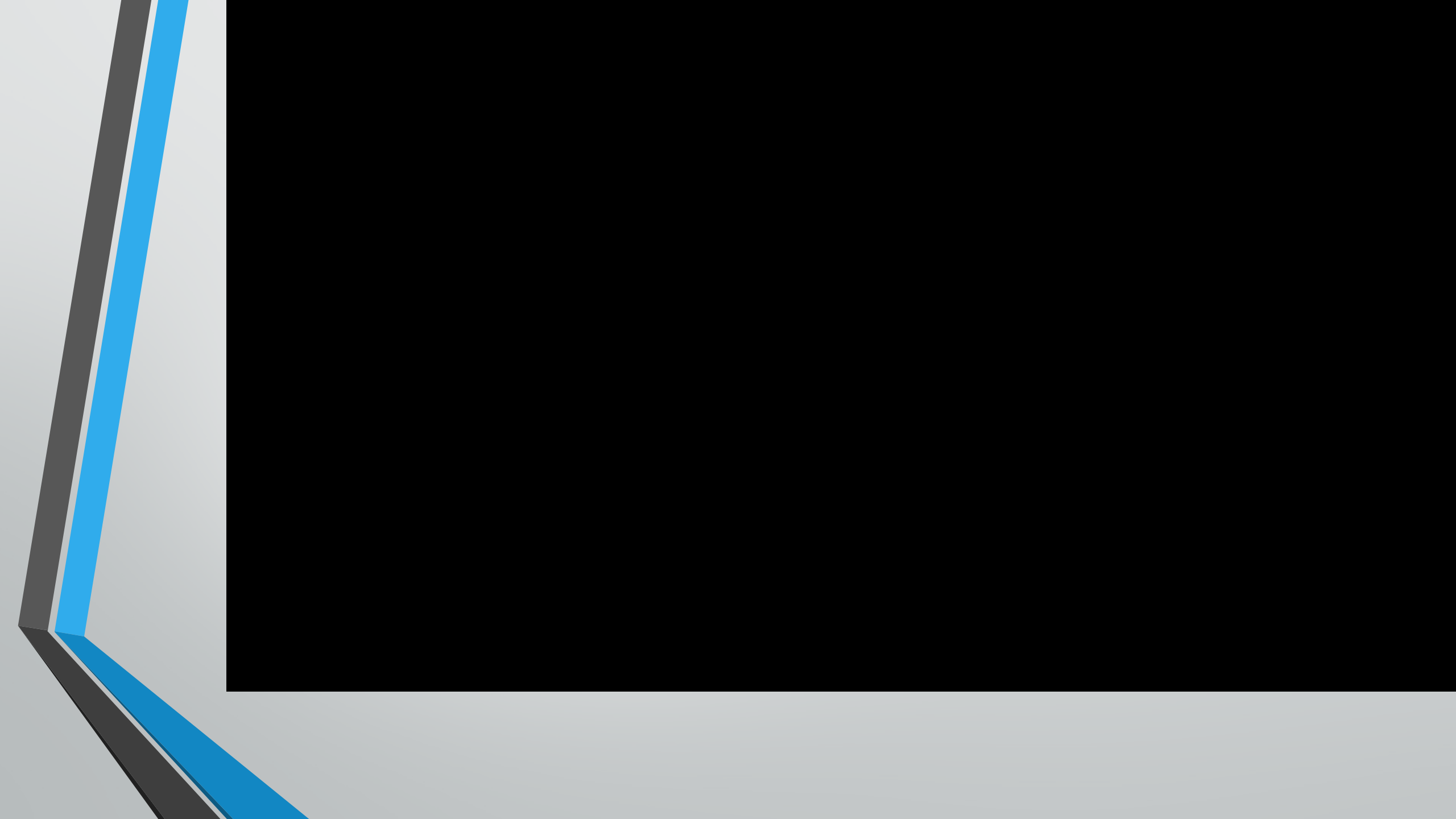
"Water is Life"



2011

FCID was looking for a solution to reduce canal spills and manage the canals more efficient.

Canal Automation seemed to be a good solution for FCID



Water Conservation

"Water is Life"

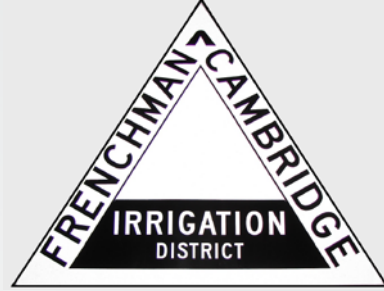


Grants:

| Year | Project | Nebraska | Reclamation | FCID | Total | Grant Type |
|---------------|--------------------------------|--------------------|--------------------|--------------------|--------------------|-------------|
| 2011 | Bartley Pump Station | | \$754,000 | \$824,173 | \$1,578,173 | WaterSMART |
| 2012 | Cambridge Canal Automation | | \$299,700 | \$332,300 | \$632,000 | WaterSMART |
| 2012 | Pump Station Automation | | \$94,900 | \$96,400 | \$191,300 | Area Office |
| 2017 | Cambridge Canal TCC (Phase I) | \$915,500 | | \$610,400 | \$1,525,900 | WSF |
| 2019 | Cambridge Canal TCC (Phase II) | \$528,600 | | \$352,470 | \$881,070 | WSF |
| Totals | | \$1,444,100 | \$1,148,600 | \$2,215,743 | \$4,808,443 | |

Rubicon Water

"Water is Life"



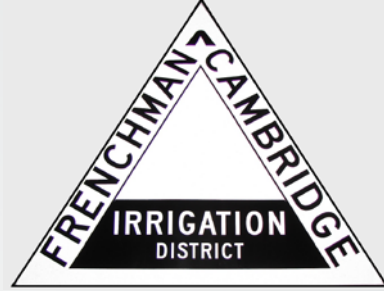
Automated Cambridge Canal head-gate and operate in upstream level mode.

35 canal structures have been equipped with Flumegates
17 additional structures will be equipped with Flumegates in 2019.

When complete will have 66 FlumeGates and one Slipmeter.

Rubicon Water

"Water is Life"

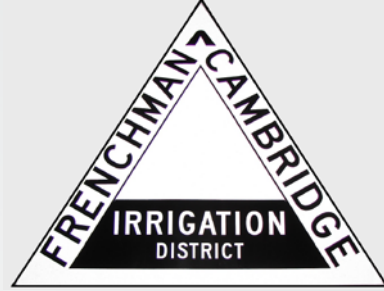


Total Channel Control (TCC) was implemented on the first 28 miles of Cambridge Canal

TCC will be extended an additional 15 miles in 2019. This solution will eliminate nearly all operational spills on the Cambridge Canal

Rubicon Water

"Water is Life"



SCADA Connect software is used from the office.

A radio network enables inter-communication between the Flumegates.

All components work together, automatically controlling gates according to a canal-wide objective of matching supply with demand.



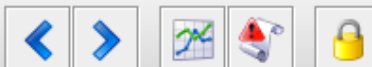


Cambridge Diversion Dam









CC 2.3 MILE

Time
Poll

SITE ID 1003 **RTU Software Ver. No.** 5.032 **Elevation** 0.000 ft **Operating Level** 30.700 ft

- Control Suspended
- Peer Communications Status
- RTU Time Not Set
- Sites Table Not in MOSCAD RTU
- Drown Alarm Status

| | | | |
|---------------------------|----------|----------|--------|
| Control Mode | POSITION | Variance | -0.682 |
| U/S Water Level | 30.018 | ft | 0.000 |
| D/S Water Level | 0.000 | ft | |
| Current Flow | 0.0 | cfs | 0.0 |
| Current Volume for Season | 17562.3 | AcreFt | |

Site Status

Sensor Status

Local Ctrl. Tuning

TCC Tuning

Comms. Setup

Presets

Flow Accum.

Flow Calculator

Flumegate R

GATE 1

SDB 6.150

- Gate 1 Position 10.0 in 10.0
- Gate 1 Elevation 30.456 ft
- Gate 1 Flow 0.0 cfs
- Gate 1 Mode AUTO

Gate Status

Remote Mode

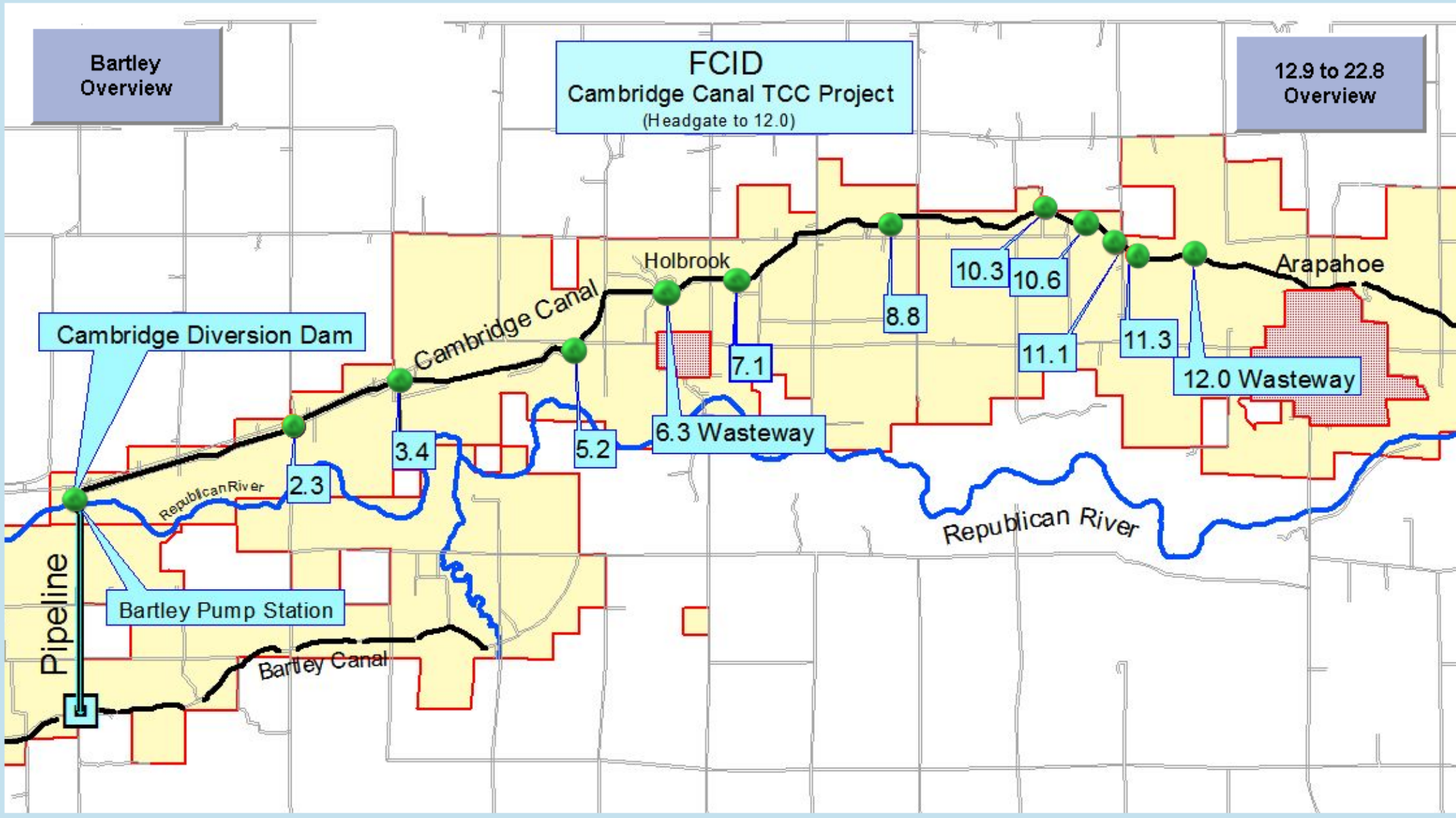
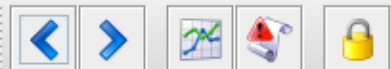
GATE 2

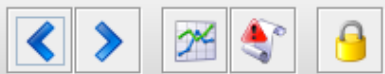
SDB 6.150

- Gate 2 Position 10.0 in 10.0
- Gate 2 Elevation 30.463 ft
- Gate 2 Flow 0.0 cfs
- Gate 2 Mode AUTO

Gate Status

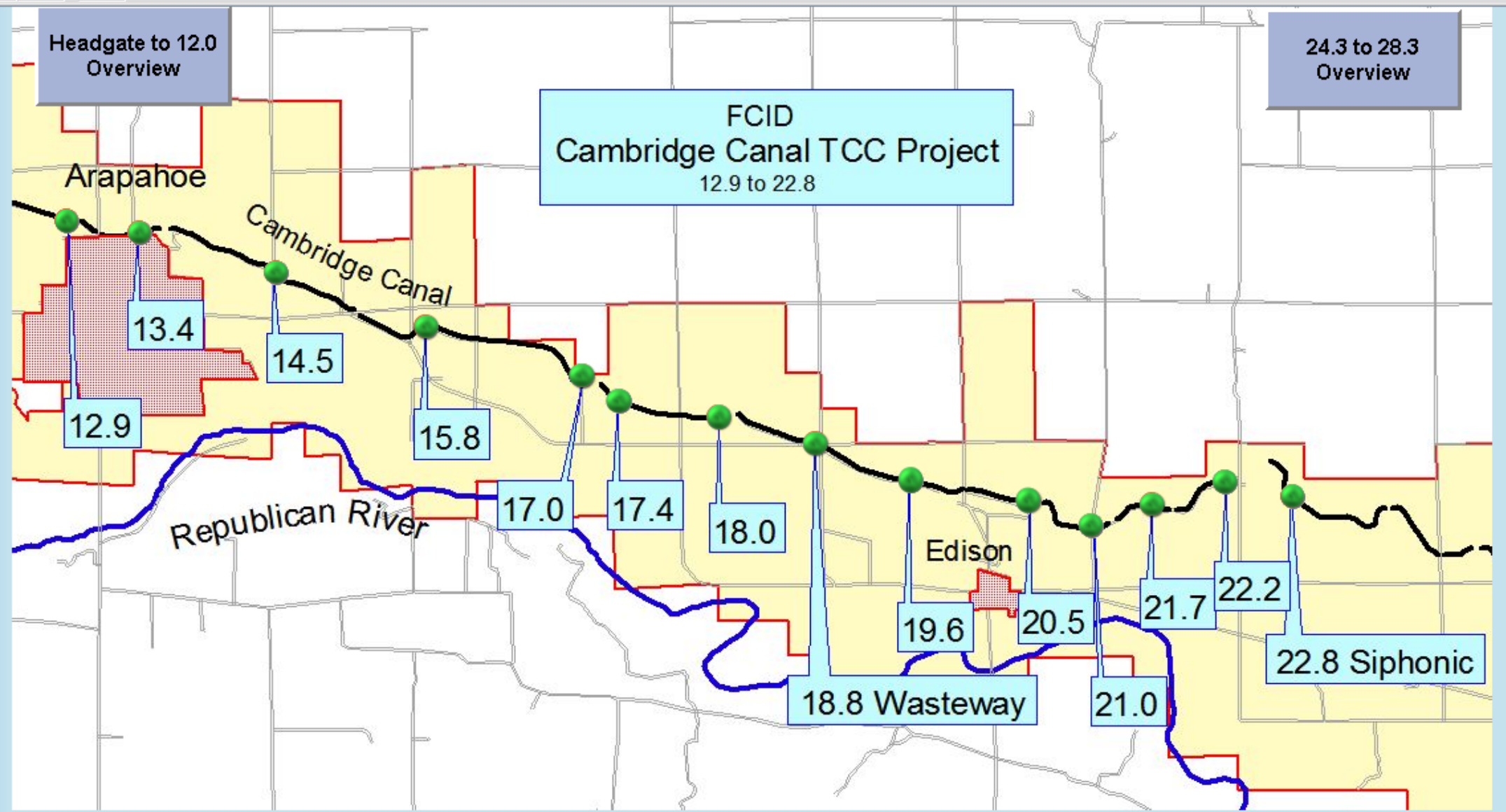
Remote Mode

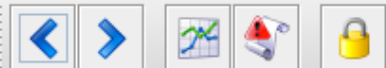




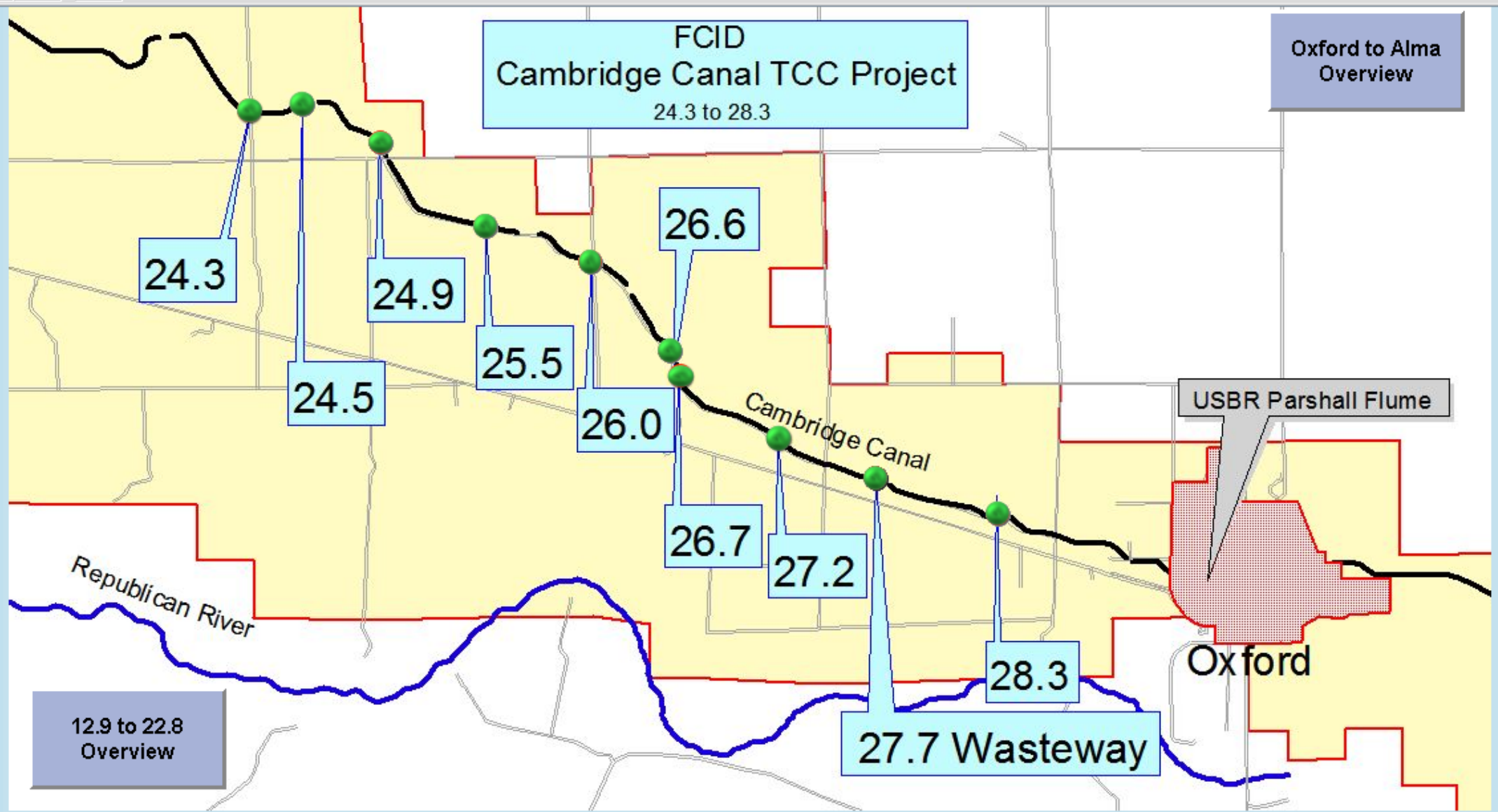
Find By Name

- Comms.
- Back
- Forward
- Alarms
- Trend
- Paging
- Log In/Out
- EXIT



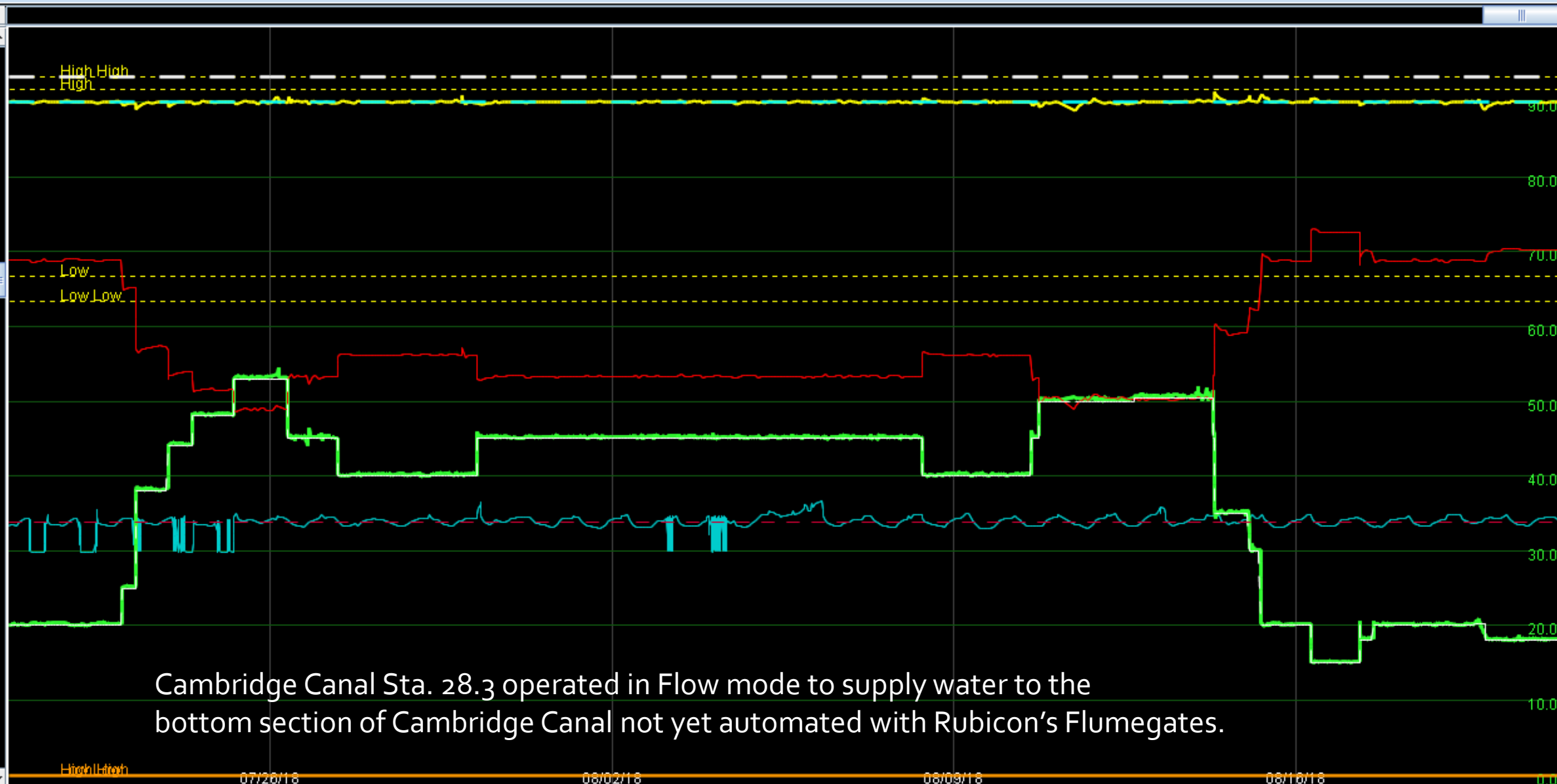


Find By Name

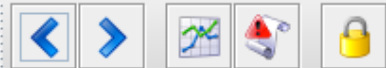




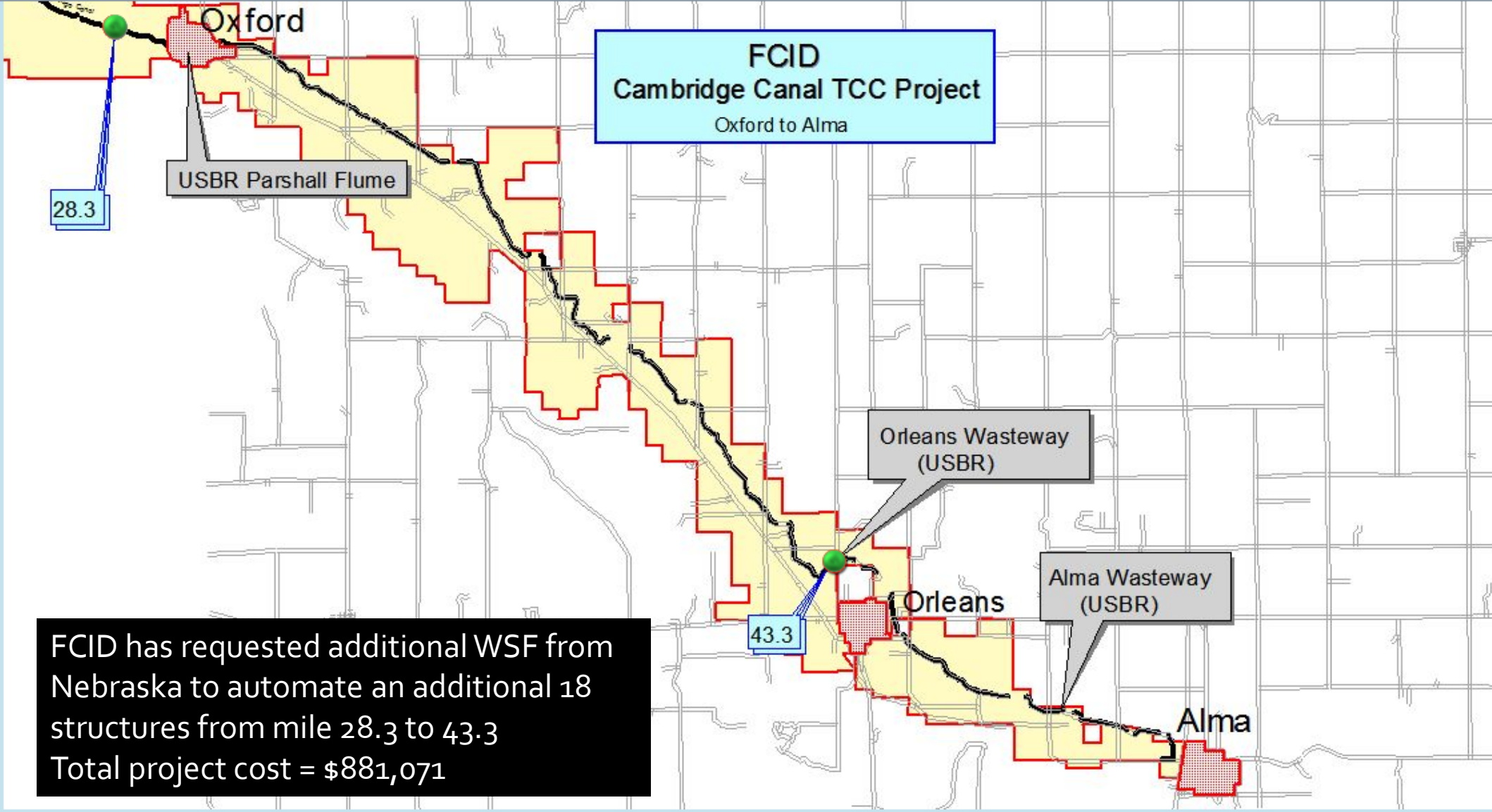
Default 28.3



Cambridge Canal Sta. 28.3 operated in Flow mode to supply water to the bottom section of Cambridge Canal not yet automated with Rubicon's Flumegates.



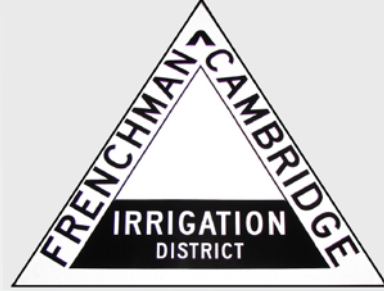
Find By Name



FCID has requested additional WSF from Nebraska to automate an additional 18 structures from mile 28.3 to 43.3
Total project cost = \$881,071

Water Conservation

"Water is Life"

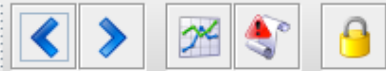


Bartley Pump Station Solutions:

9 Flumegates and one observation site.

TCC solution eliminates spills during pump station operation.

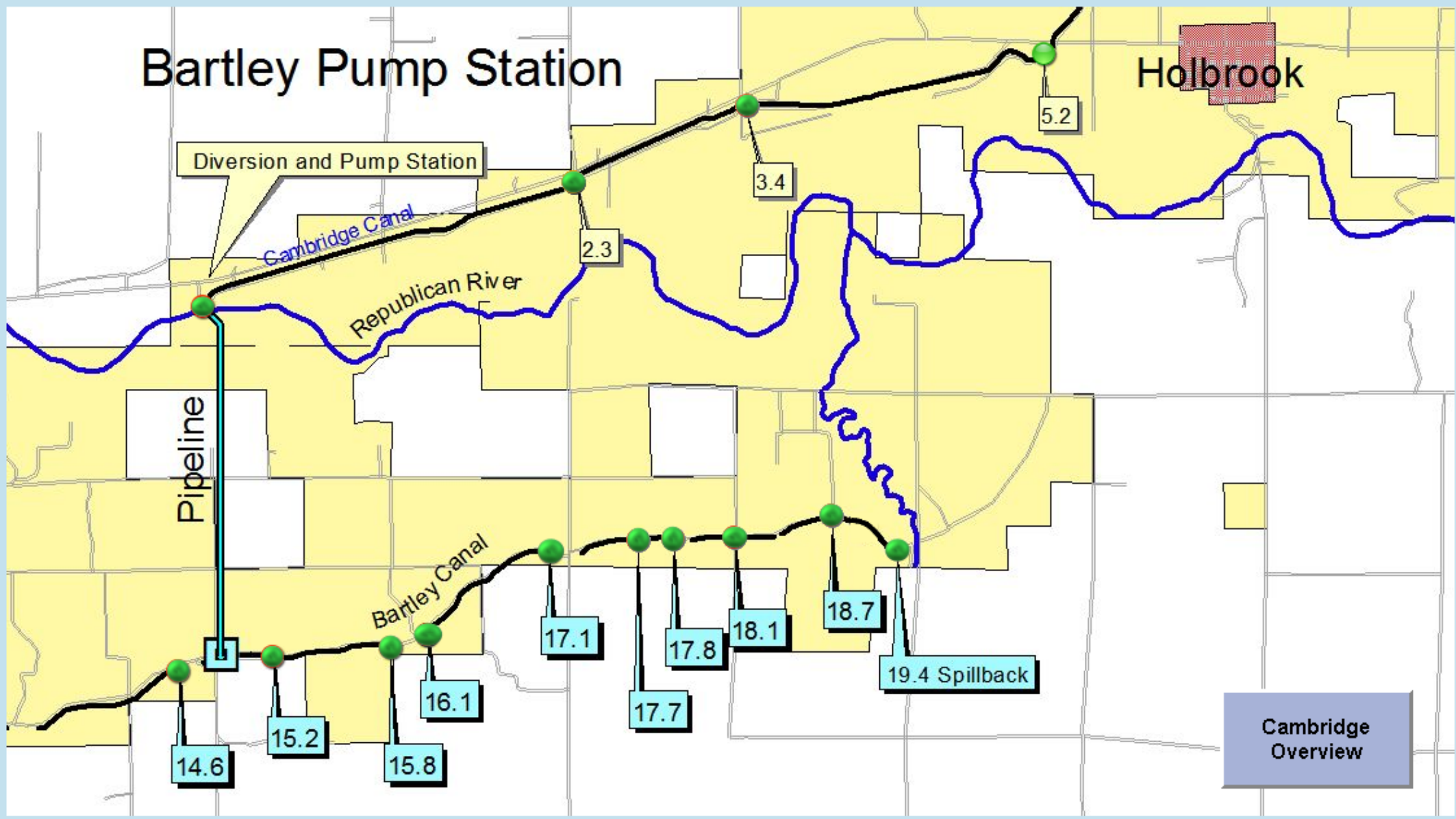
Modified pump controls to work with TCC



Find By Name



Bartley Pump Station



Cambridge Overview



Time Domain: User Defined

Default BC 14.6 BC 15.2 BC 15.8 BC 16.1 BC 17.1 BC 17.7 BC 17.8 BC 18.1 BC 18.7 BC 19.1 WW Pump Station



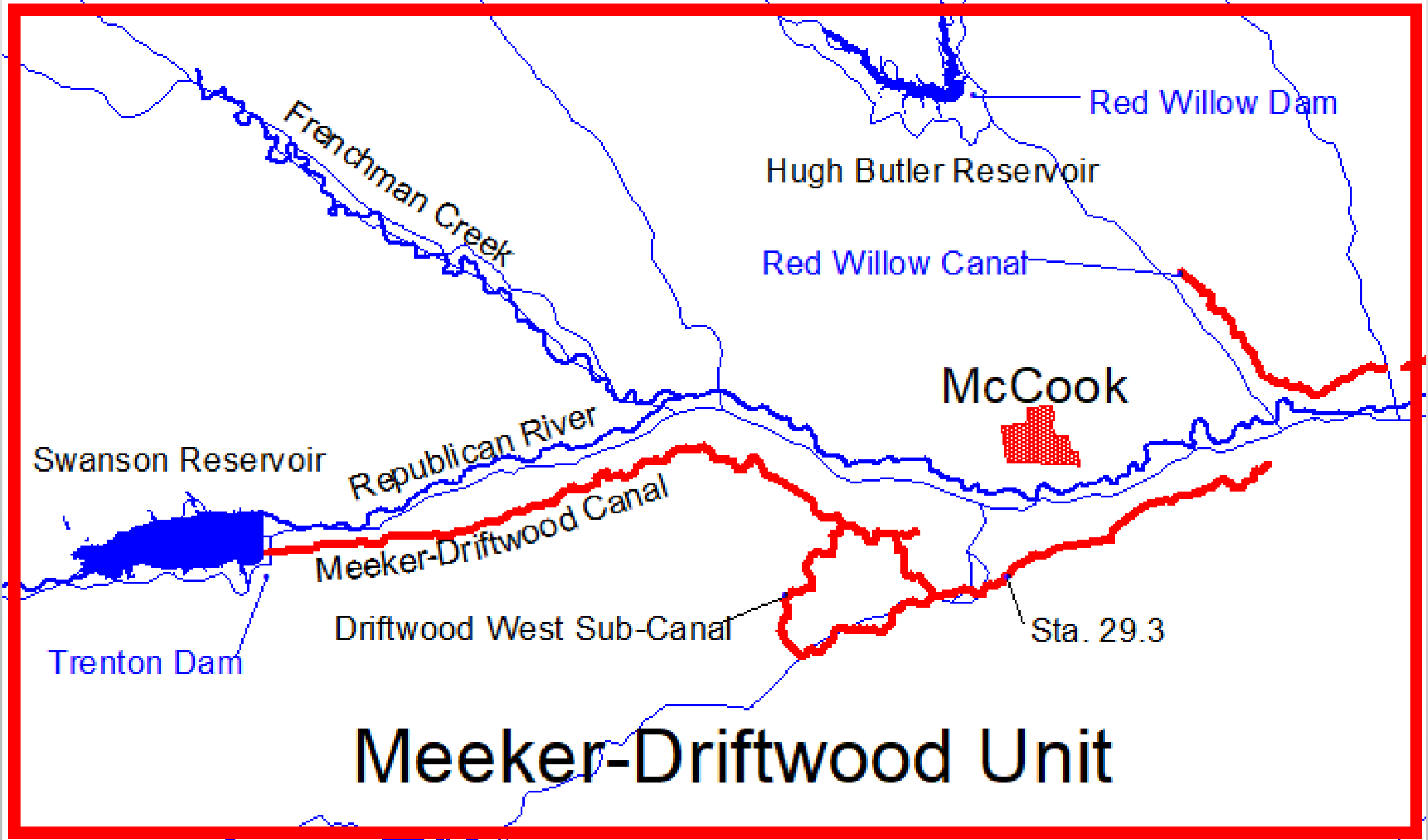
Spillway
Crest =
10.00



TCC Set
at 9.70 ft

Colorado Compact Settlement Funds

- For over a decade Colorado failed to comply with the Republican River Compact.
- For the past 8 years FCID has been pleading our case with Nebraska that Meeker-Driftwood Canal was harmed.
- In 2018 the three States reached a settlement agreement.
- Nebraska was paid 4 million dollars



Meeker-Driftwood Unit

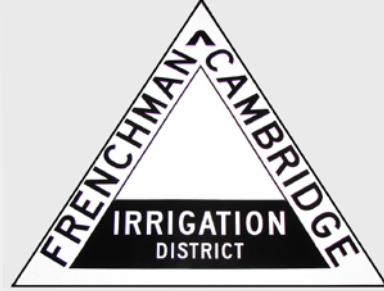


TCC Benefits

- Eliminates Unwanted Canal Spills
- Water orders 7 days a week
- Short notice water order changes
 - REA Peak Power Controls and Rain events
- On-line water orders and water balances

RRA Forms

"Water is Life"



Reclamation Reform Act of 1982

Everyone that farms 240 acres under a Federal Project must comply with the RRA laws.

Complete all required forms each year and file with the Irrigation District.

No one can irrigate over 960 acres

An aerial photograph of a large reservoir, likely a dam, with a wide, light-colored earthen embankment. The water is a calm, greenish-grey color. The surrounding landscape is a mix of brown and green fields, with some trees and a few buildings visible. The sky is clear and blue.

Thank You!!