

Surface Water Delivery Projects

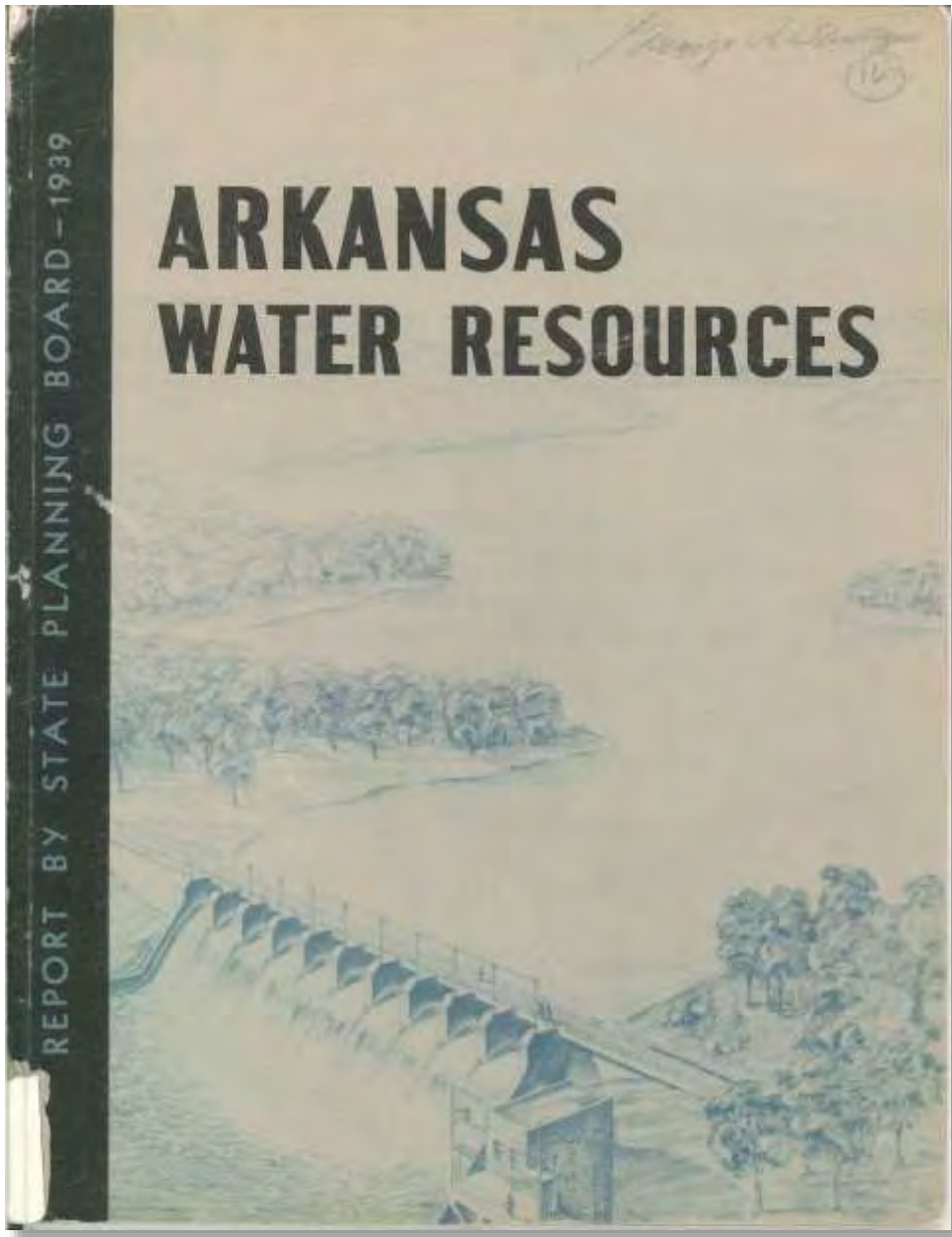
Grand Prairie
Bayou Meto
Plum Bayou



What year were these statements made?

“Irrigation water for the rice fields has been obtained almost entirely from shallow wells in the past, but overdrafts on these wells have lowered the ground water table sufficiently to seriously affect production costs in some localities.”

“Some studies have already been undertaken to determine the extent of the overdraft and means of supplementing the ground water supplies with surface water...”



1939

THE WHITE HOUSE
WASHINGTON

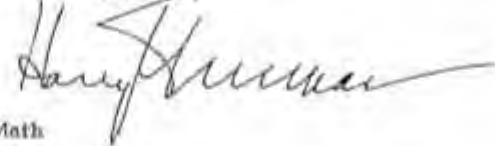
June 21, 1949

321

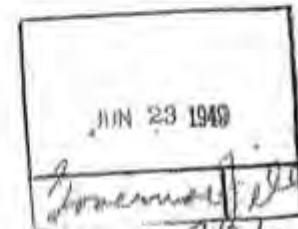
Dear Governor:

I appreciated very much yours
of the seventeenth in regard to the Arkansas
River project and the Grand Prairie irrigation
project. I am familiar with both of them and
I hope some means can be found to work them
out eventually.

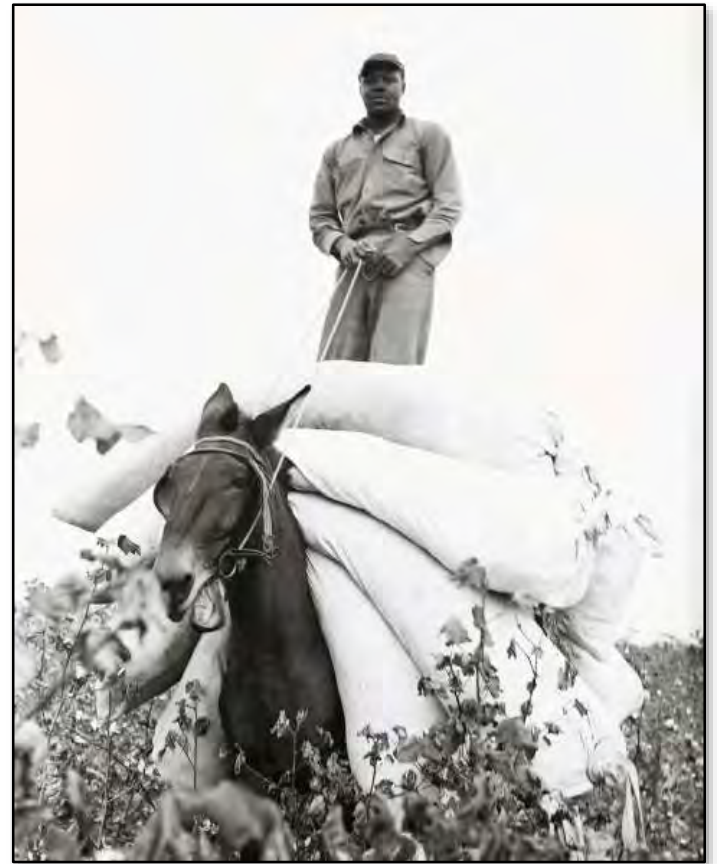
Sincerely yours,



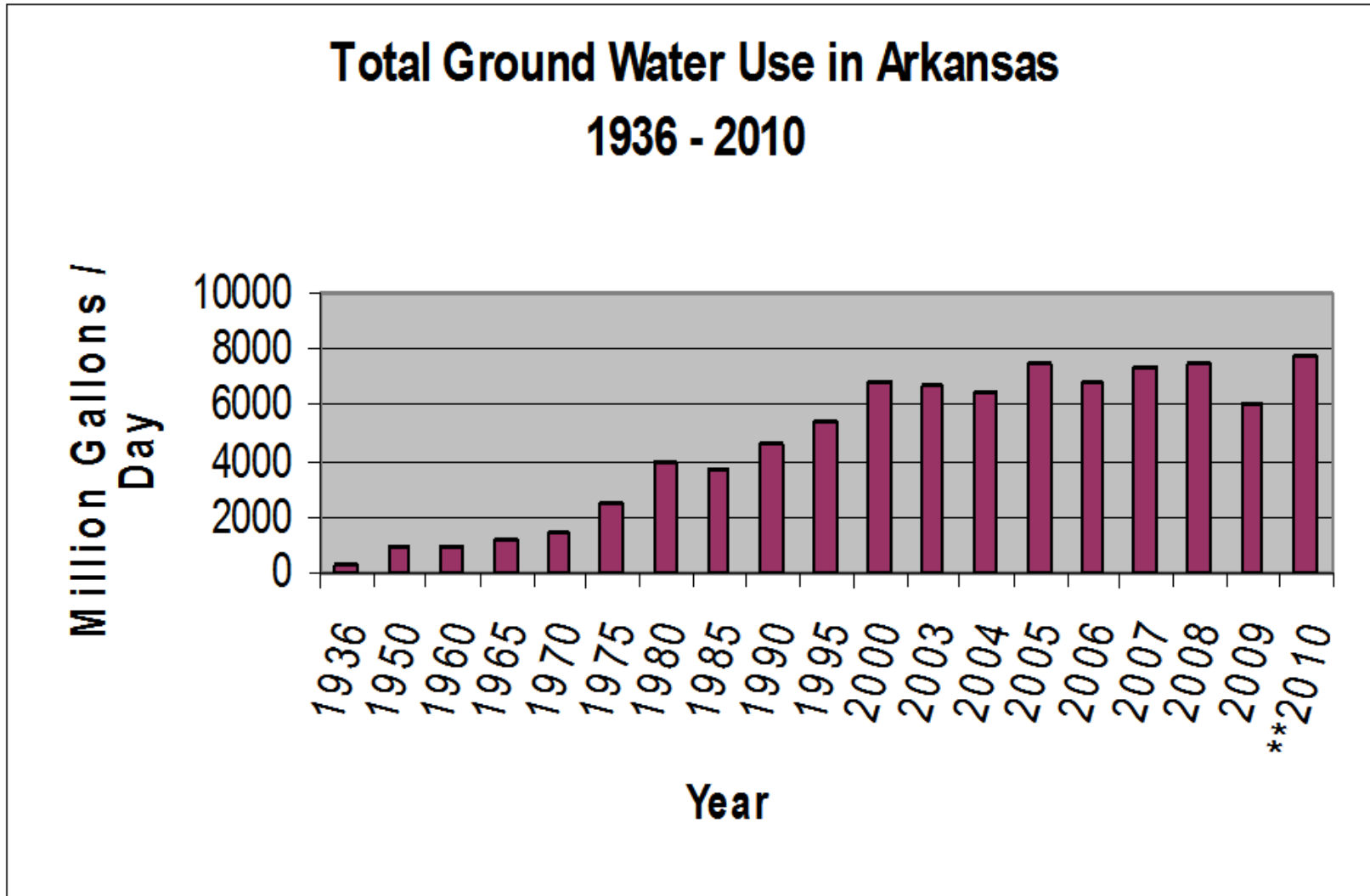
Honorable Sid McMath
Governor of Arkansas
Little Rock, Arkansas



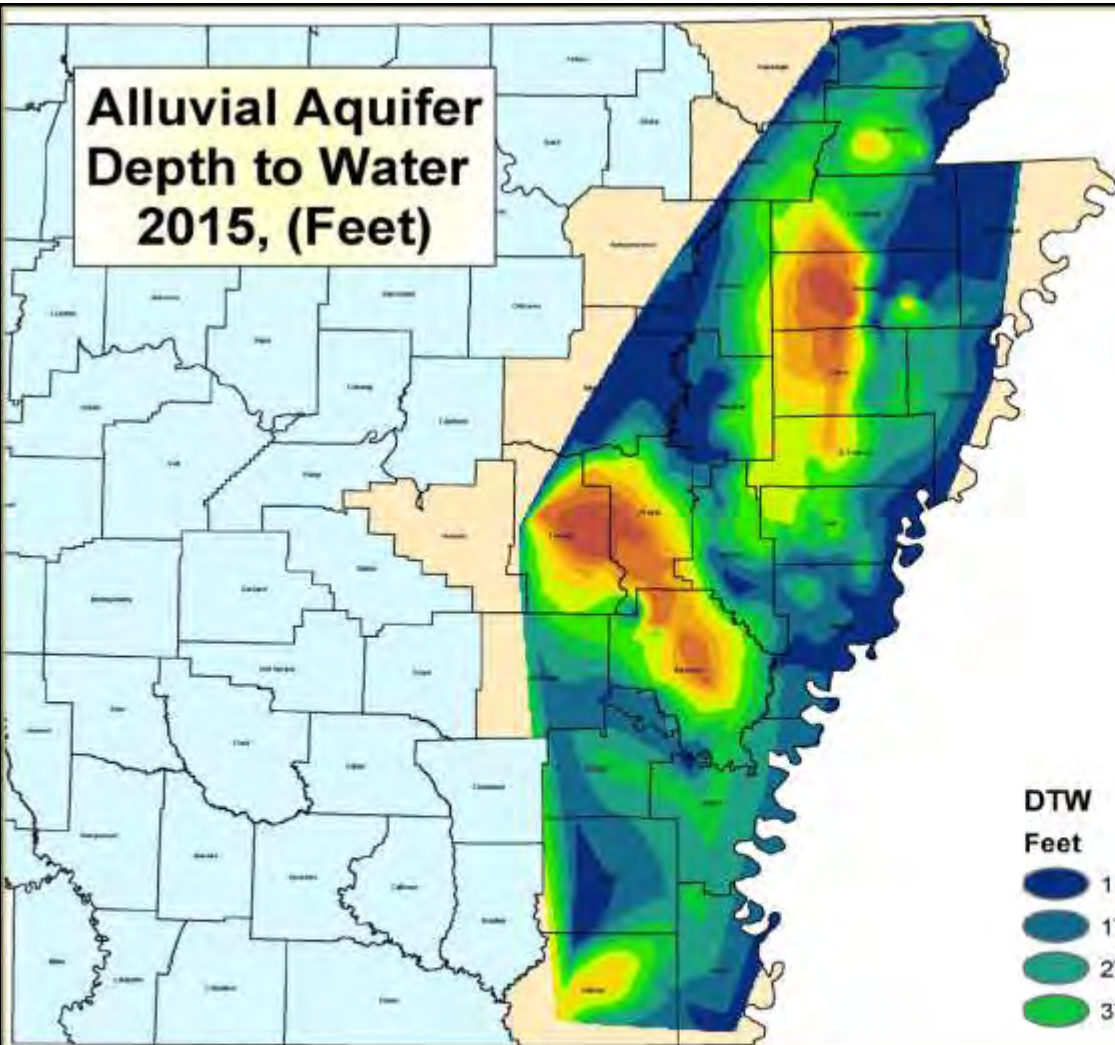
**President Truman to
Governor McMath
1949**



Then we really started irrigating



Alluvial Aquifer Depth to Water 2015, (Feet)



Legend

DTW Feet	DTW Feet
1.37 Ft. to 17.16 Ft.	48.17 Ft. to 61.13 Ft.
17.17 Ft. to 27.31 Ft.	61.14 Ft. to 74.66 Ft.
27.32 Ft. to 37.45 Ft.	74.67 Ft. to 88.75 Ft.
37.46 Ft. to 48.16 Ft.	88.76 Ft. to 102.84 Ft.
	102.85 Ft. to 117.50 Ft.
	117.51 Ft. to 145.12 Ft.

*Surface Created by
Natural Neighbor Interpolation
(ArcGIS 10.3/ Spatial Analyst Extension)

This map based on 449 data points, and the portions
of counties not shaded indicate no well data collected
in 2015



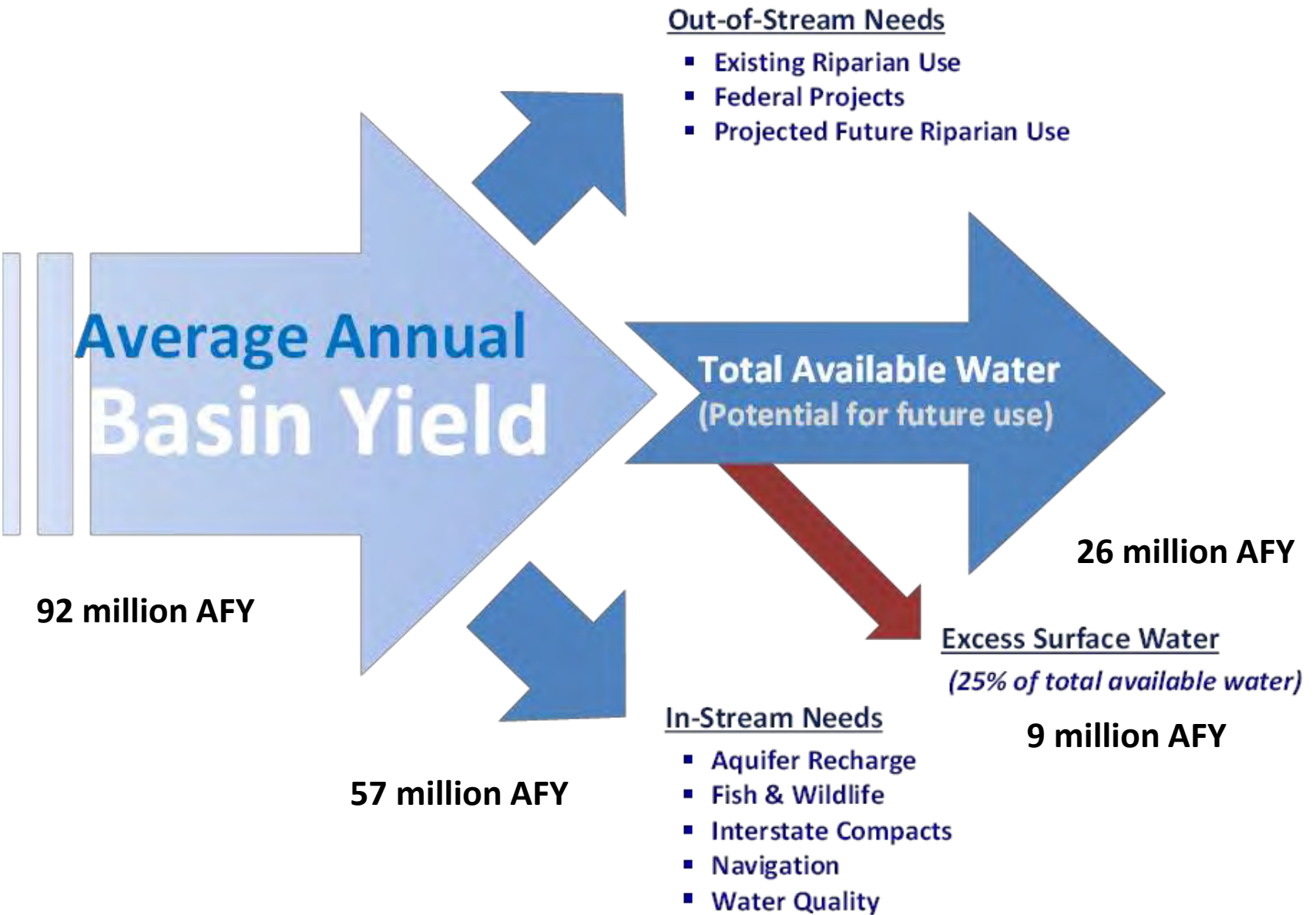
What's the plan?

- Conserve
- Use mostly surface water
- Prepare for drought
- Educate

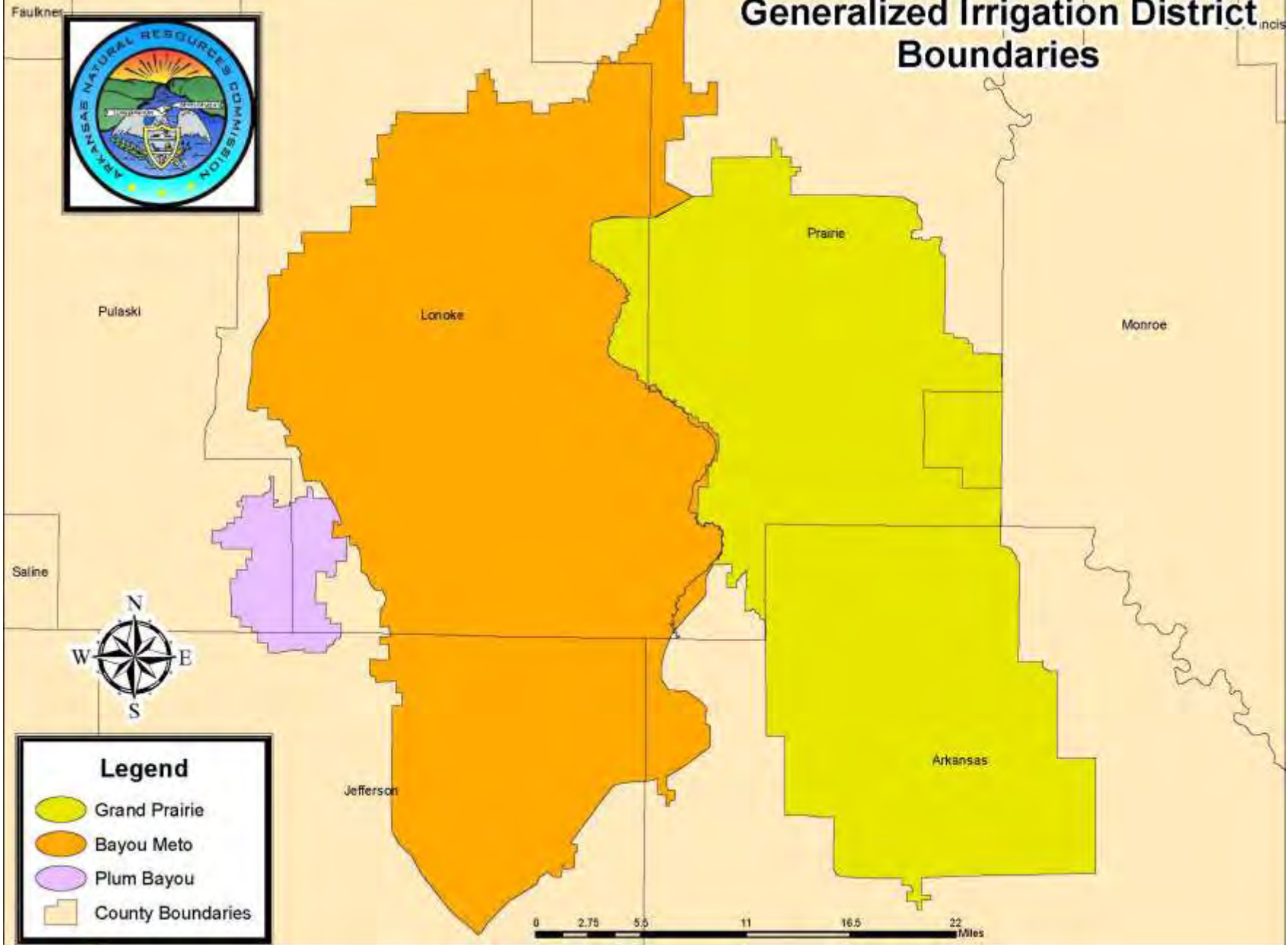


Solutions from 1990 Water Plan

- Groundwater depletion
 - Excess water should be provided from the White River and Arkansas River for use in the Grand Prairie Region
- Surface-Water Depletion
 - Excess water should be provided from the Arkansas River to Plum Bayou and Bayou Meto



Generalized Irrigation District Boundaries

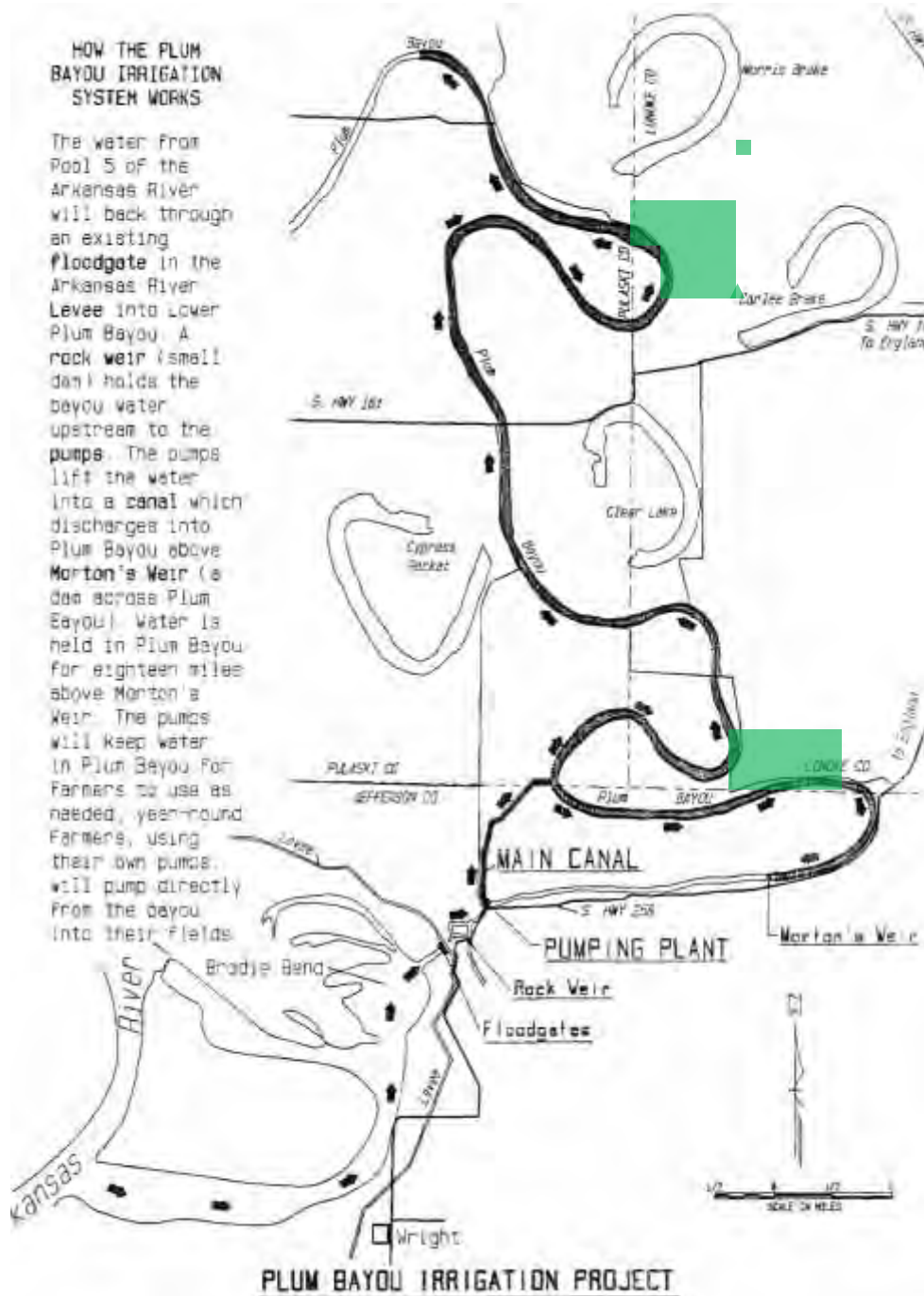


Legend

-  Grand Prairie
-  Bayou Meto
-  Plum Bayou
-  County Boundaries

HOW THE PLUM BAYOU IRRIGATION SYSTEM WORKS

The water from Pool 5 of the Arkansas River will back through an existing **floodgate** in the Arkansas River Levee into Lower Plum Bayou. A **rock weir** (small dam) holds the bayou water upstream to the **pumps**. The pumps lift the water into a **canal** which discharges into Plum Bayou above **Morton's Weir** (a dam across Plum Bayou). Water is held in Plum Bayou for eighteen miles above Morton's Weir. The pumps will keep water in Plum Bayou for farmers to use as needed, year-round. Farmers, using their own pumps, will pump directly from the bayou into their fields.



PLUM BAYOU IRRIGATION PROJECT



- On this farm, 569 acres watered from PBID in 2015
- Fees were \$15.18 per acre



Grand Prairie



- Pump Station will be able to pump 1,640 cfs of water from the White River
- Pumping capacity includes four 360 cfs pumps and two 100 cfs pumps driven by 1,650 HP motors
- Over 250,000 acres of irrigated cropland in the heart of the Grand Prairie Critical Groundwater Area
- Includes on-farm conservation as a major component
- Environmental and flood control benefits

Bayou Meto



Construction of Pump Station No. 1 (Front/outlet side view)

- Two major pump stations constructed
- 1,750 cfs from the Arkansas River
- Four 1,500 h.p. pumps and two 500 h.p. pumps
- Approx. 268,000 irrigated acres
- Bayou Meto WMA – Flood control

Plum Bayou



- Completed 1992
- 14,000 acres
- <180 cfs
- Over 10 miles of pipelines
- Real estate tax about \$2 per irrigated acre
- Water charge
 - \$24 acre rice
 - \$16 acre corn
 - \$8 acre soybeans

Why invest in surface water delivery?

- By 2050, only 20% of groundwater use will be sustainable
- ANRC estimates conservation will get us 25% reduction in unsustainable use
- The remainder must come from surface water conversion
- Grand Prairie and Bayou Meto will reduce unsustainable use by 15%



<http://anrc.ark.org/>
arkansaswaterplan.org/
edward.swaim@arkansas.gov