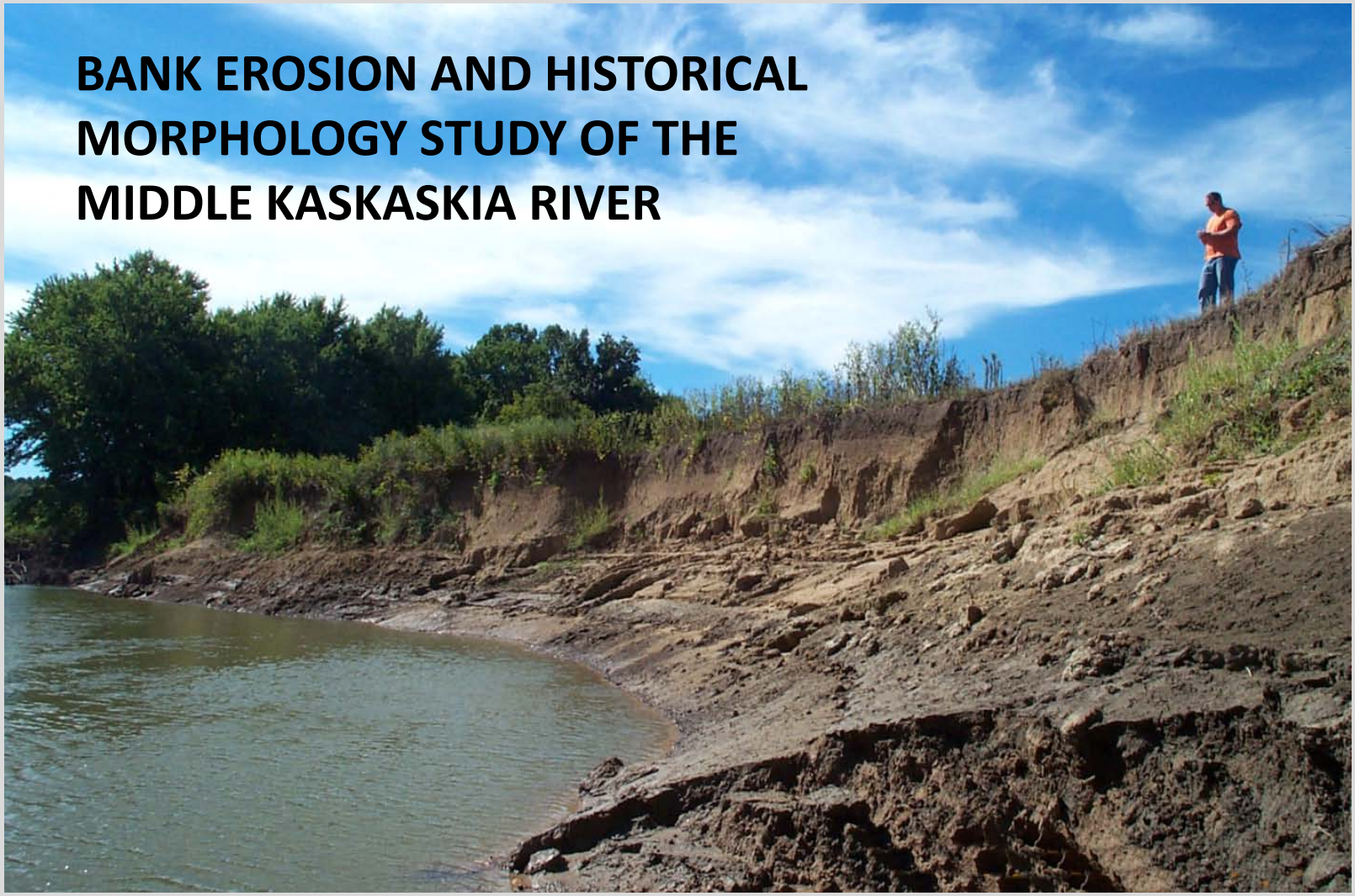
BANK EROSION AND HISTORICAL MORPHOLOGY STUDY OF THE MIDDLE KASKASKIA RIVER



Study Conducted
Jun 2001-Dec 2002
Last Presented in 2004

2002

United States and Great Britain Invade Afghanistan

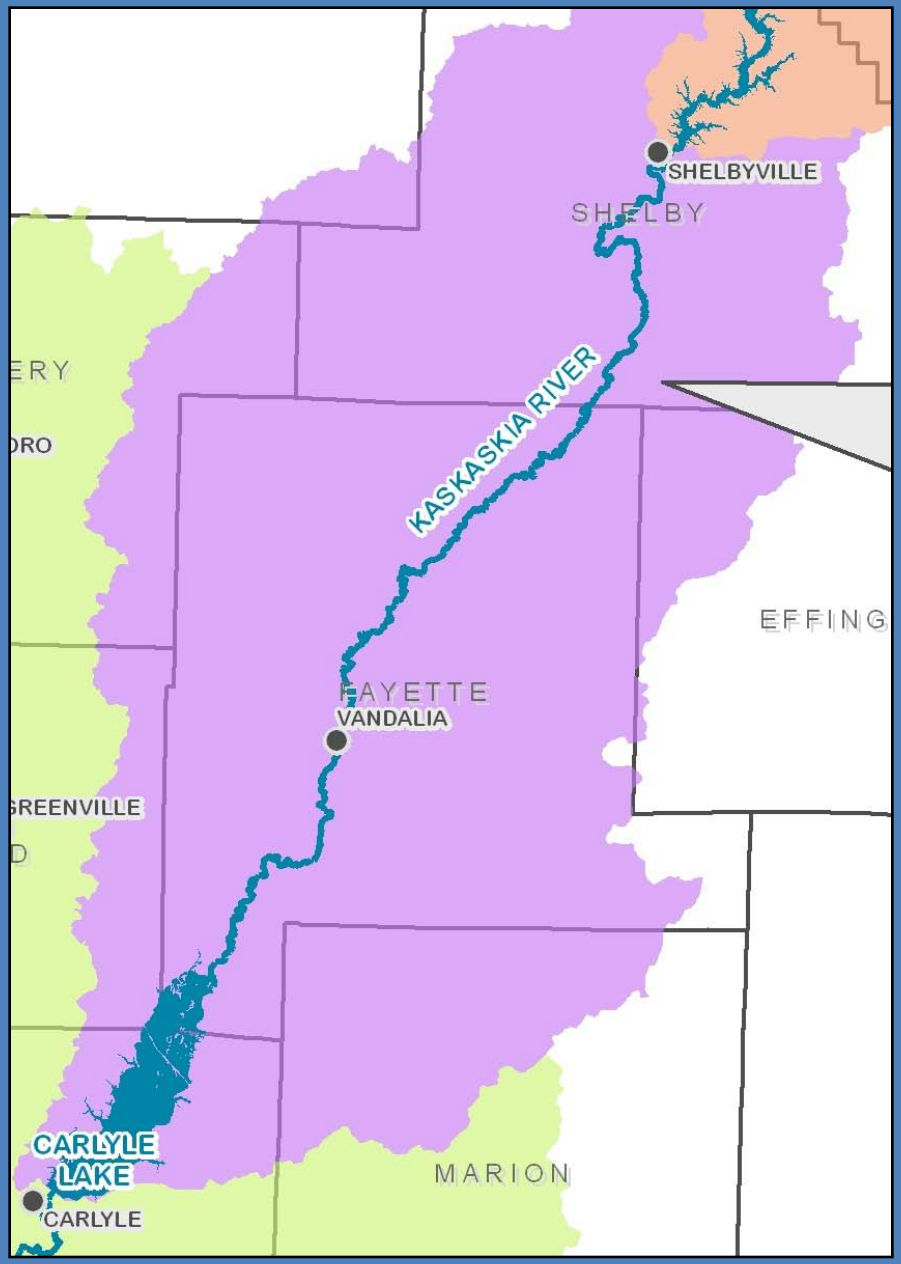
Maryland Defeats Indiana for the National Basketball Championship

2004

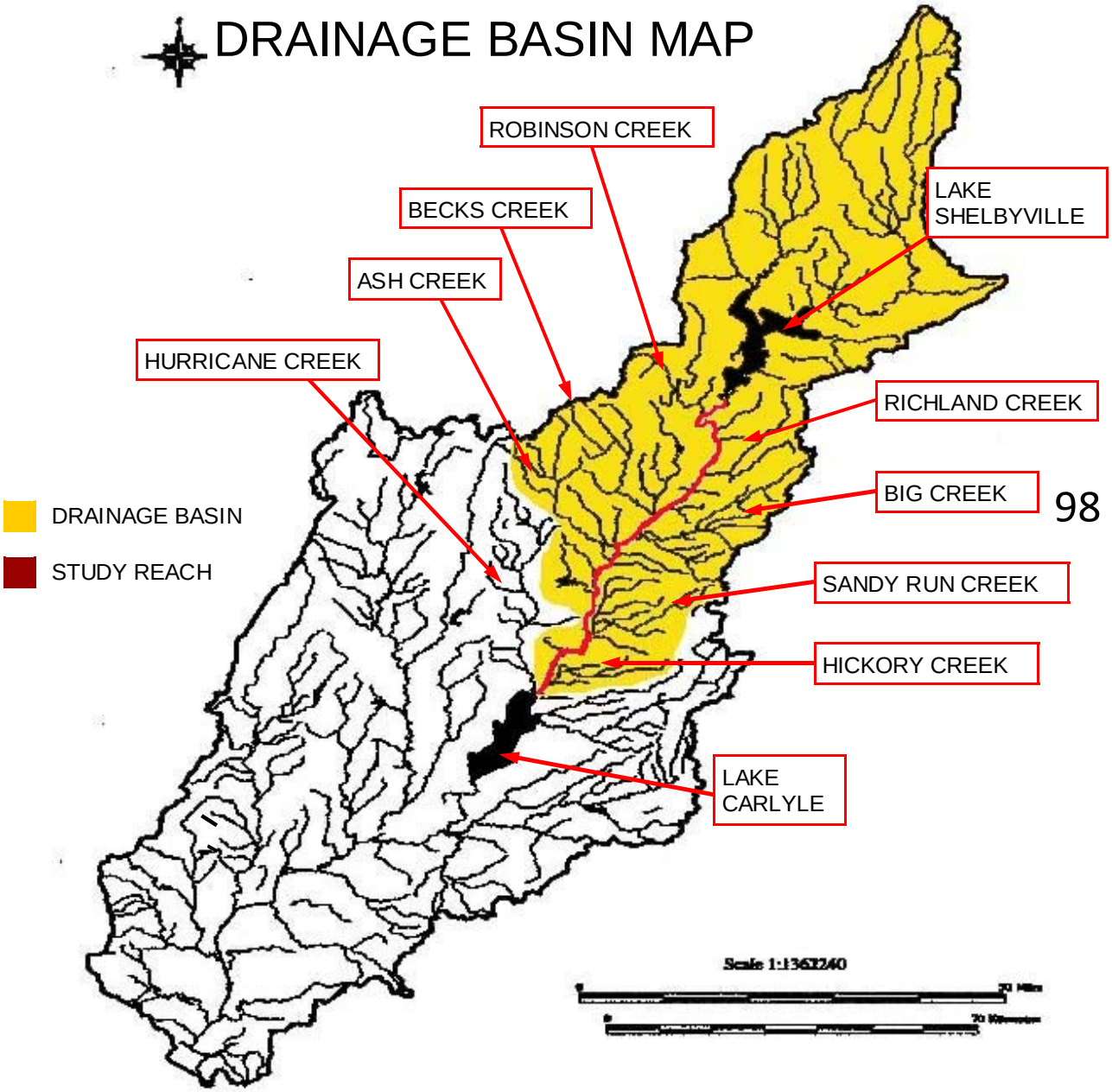
Boston Red Sox Win their First World Series since 1918

Dan Rather of CBS news announces the death of President Ronald Reagan

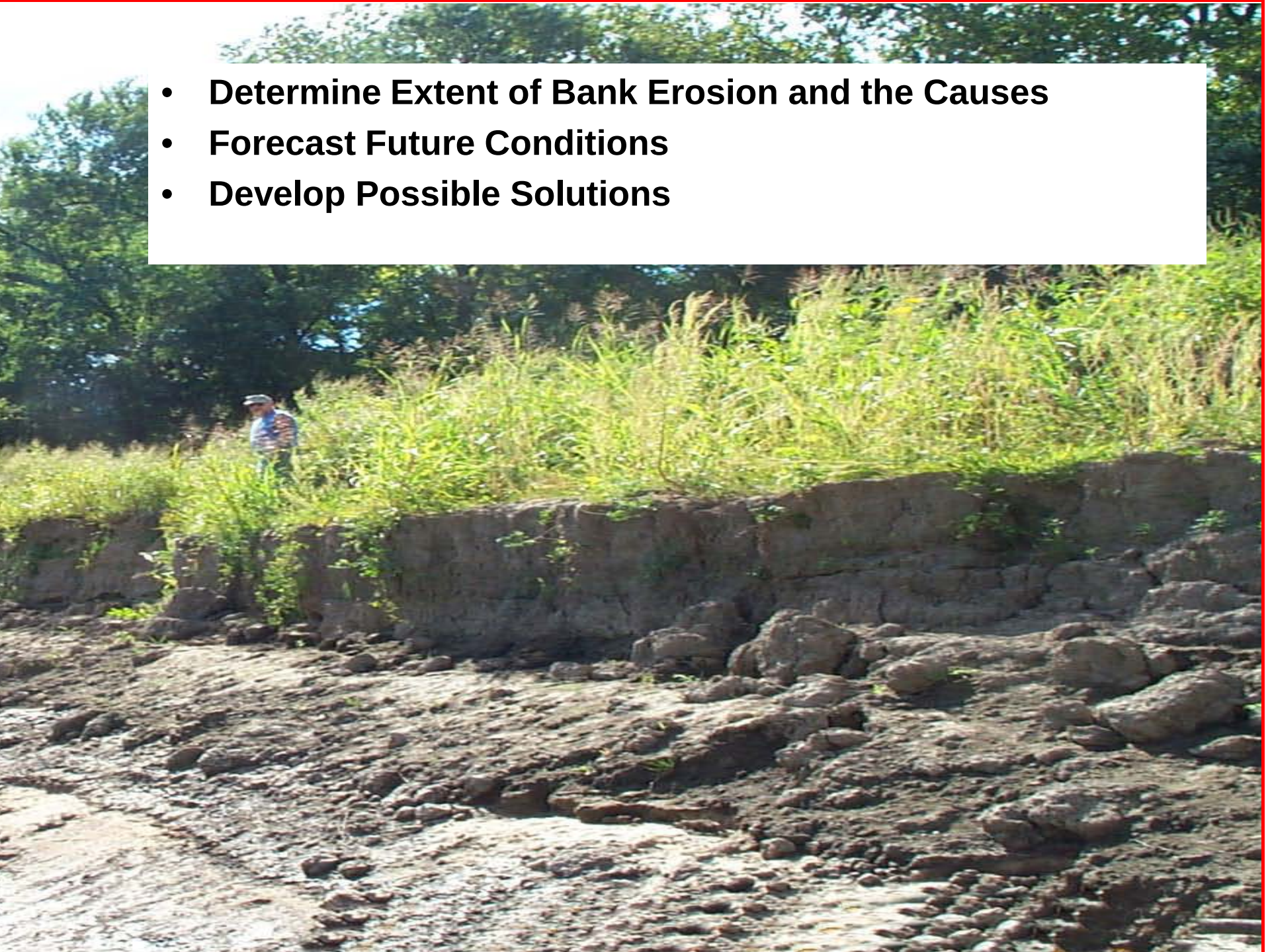
RIVER TRIVIA


SHELBYVILLE
SHELBY
ERY
ORO
KASKASKIA RIVER
EFFING
FAYETTE
VANDALIA
GREENVILLE
D
CARLYLE
LAKE
CARLYLE
MARION

KASKASKIA RIVER DRAINAGE BASIN MAP



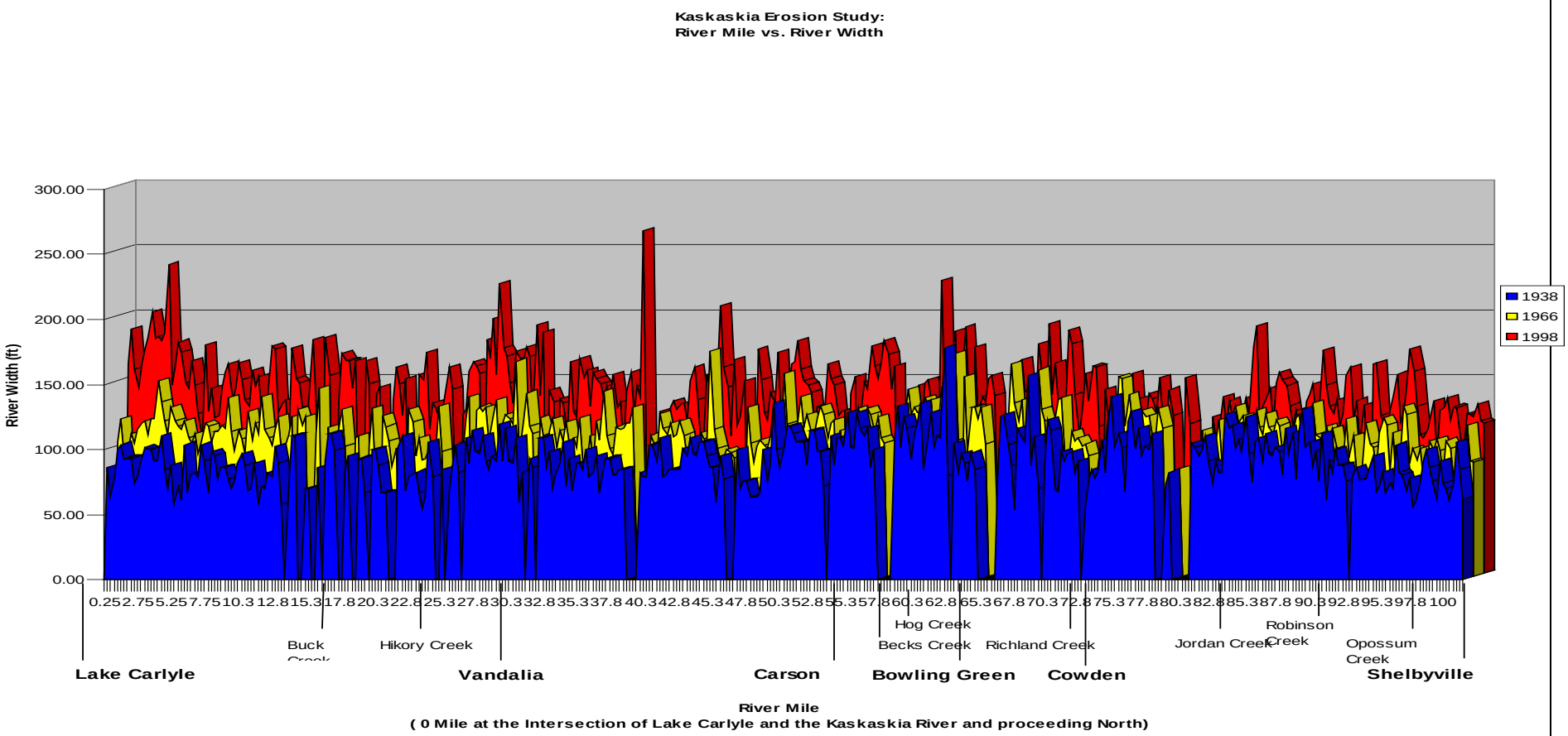
98 mile reach

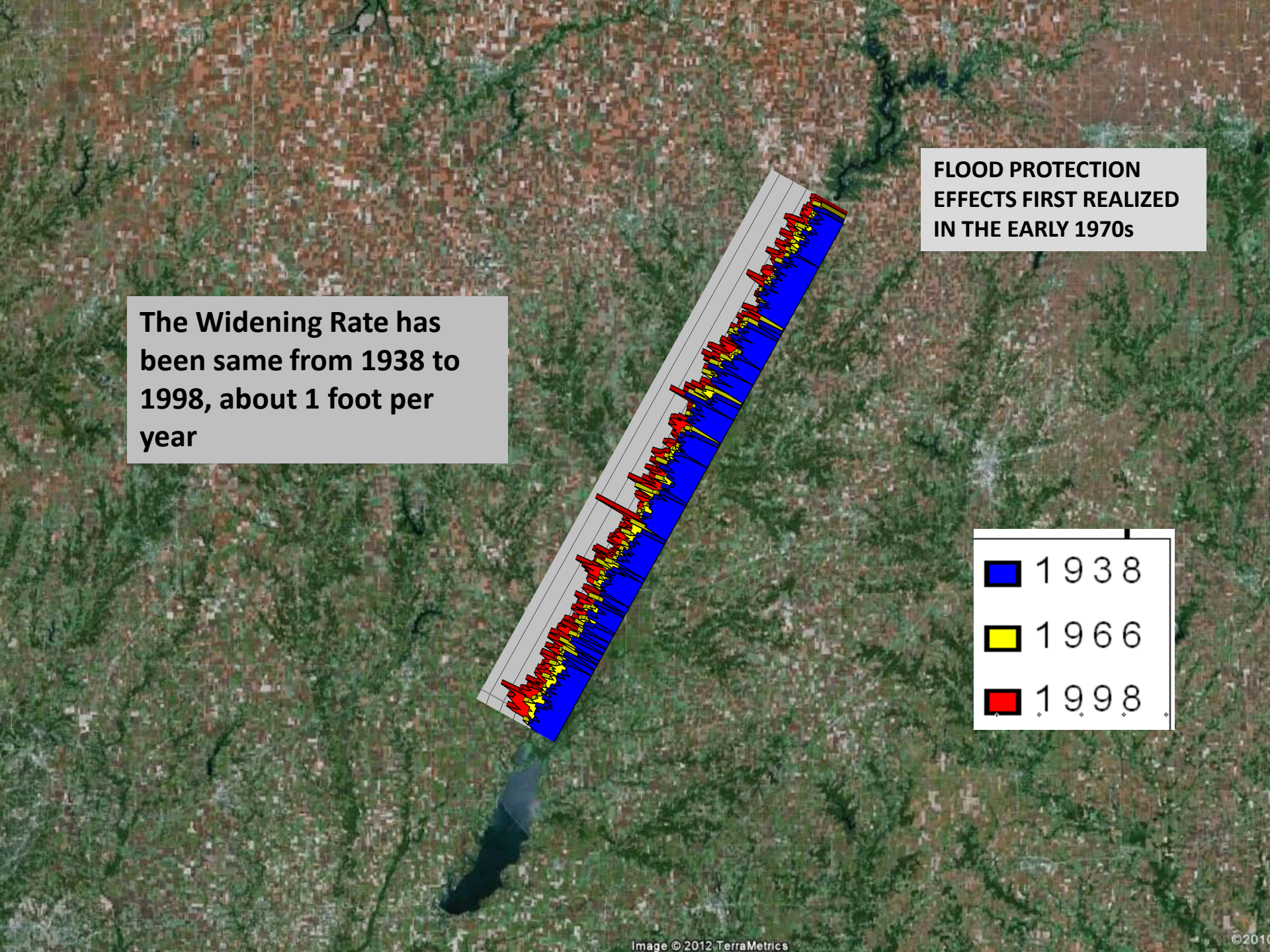


- **Determine Extent of Bank Erosion and the Causes**
- **Forecast Future Conditions**
- **Develop Possible Solutions**

VH-MIU

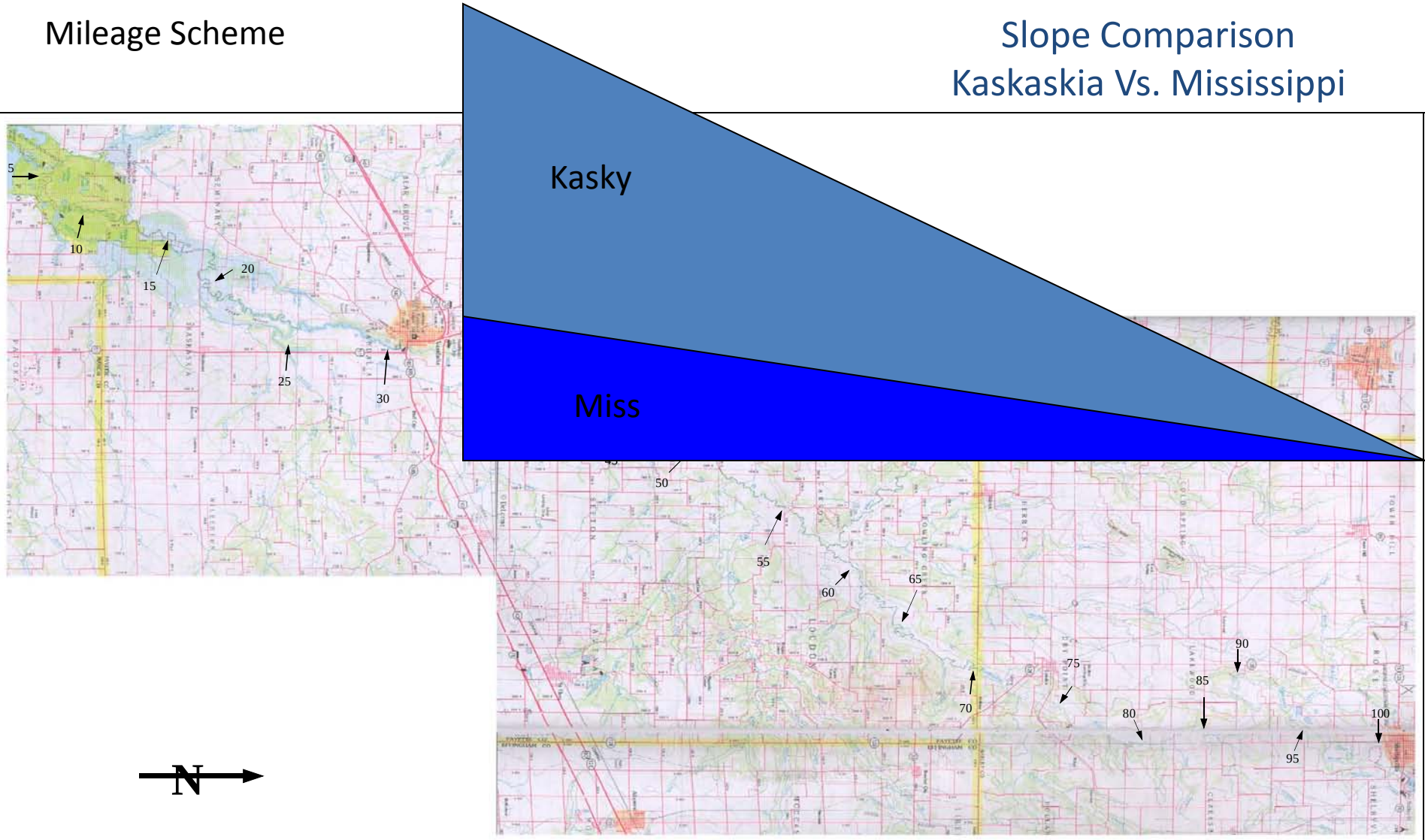
E Co Rd 1925


Kaskaskia Erosion Study:
River Mile vs. River Width
River Width (ft)
300.00
250.00
200.00
150.00
100.00
50.00
0.00
1938
1966
1998
Lake Carlyle
Buck Creek
Hikory Creek
Vandalia
Carson
Hog Creek
Becks Creek
Bowling Green
Richland Creek
Cowden
Jordan Creek
Robinson Creek
Opossum Creek
Shelbyville
River Mile
(0 Mile at the Intersection of Lake Carlyle and the Kaskaskia River and proceeding North)


FLOOD PROTECTION EFFECTS FIRST REALIZED IN THE EARLY 1970s
The Widening Rate has been same from 1938 to 1998, about 1 foot per year
1938
1966
1998
Image © 2012 TerraMetrics

Mileage Scheme

Slope Comparison
Kaskaskia Vs. Mississippi



U.S ARMY ENGINEER DISTRICT, ST. LOUIS
CORPS OF ENGINEERS
ST. LOUIS, MISSOURI

PREPARED BY: E. Brauer
DRAWN BY: E. Brauer
CHECKED BY: R. Davimroy

APPLIED RIVER ENGINEERING CENTER

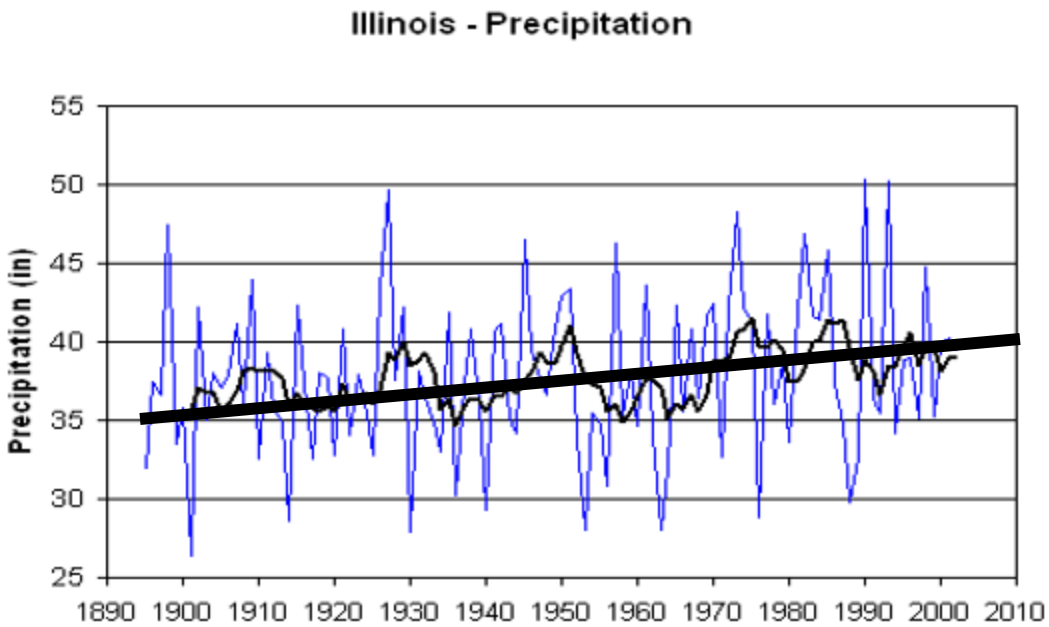
KASKASKIA RIVER
BANK EROSION STUDY

STUDY REACH MAP

17600 14080 10560 7040 3520 0 8800 17600

PLATE NO.

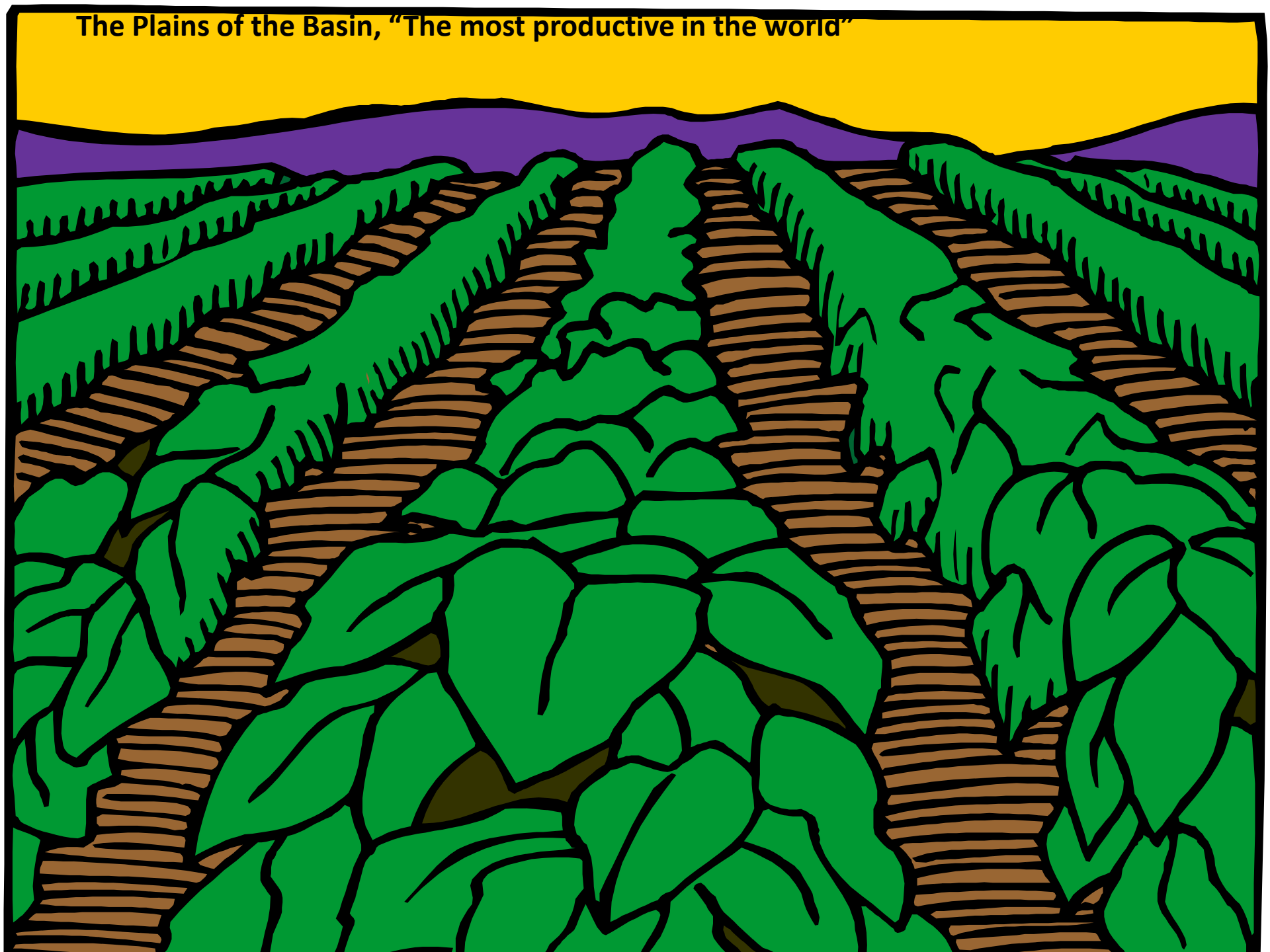
Rainfall Trends For the State of Illinois



CONVERTING THE PRAIRIES TO CROPLANDS

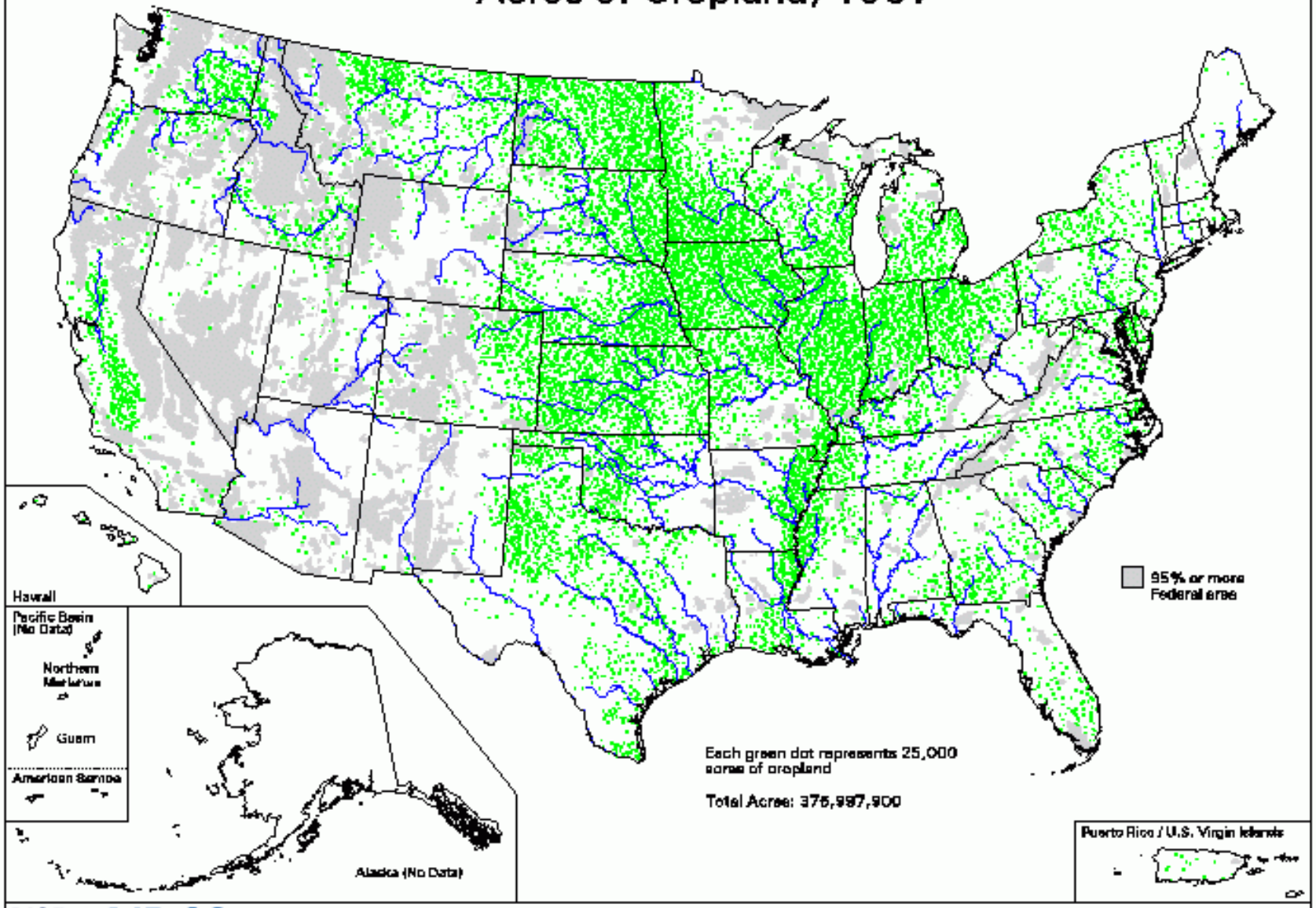
Smart Farm Engineering Practices

- Land Clearing
- Plowing and Re-Contouring the Land
- Improving Drainage….Ditching, Canals, and Drain Tiles


The Plains of the Basin, “The most productive in the world”

We are who we are today because:
We are the most productive agricultural nation in the world!
Due to the sweat and toil on the land of our forefathers and each succeeding generation

Acres of Cropland, 1997



USDA NRCS
U.S. Department of Agriculture
Natural Resources Conservation Service
Resource Assessment Division
Washington DC January 2001

Map ID: m4804

Data Source: 1997 National Resources Inventory
Revised December 2000

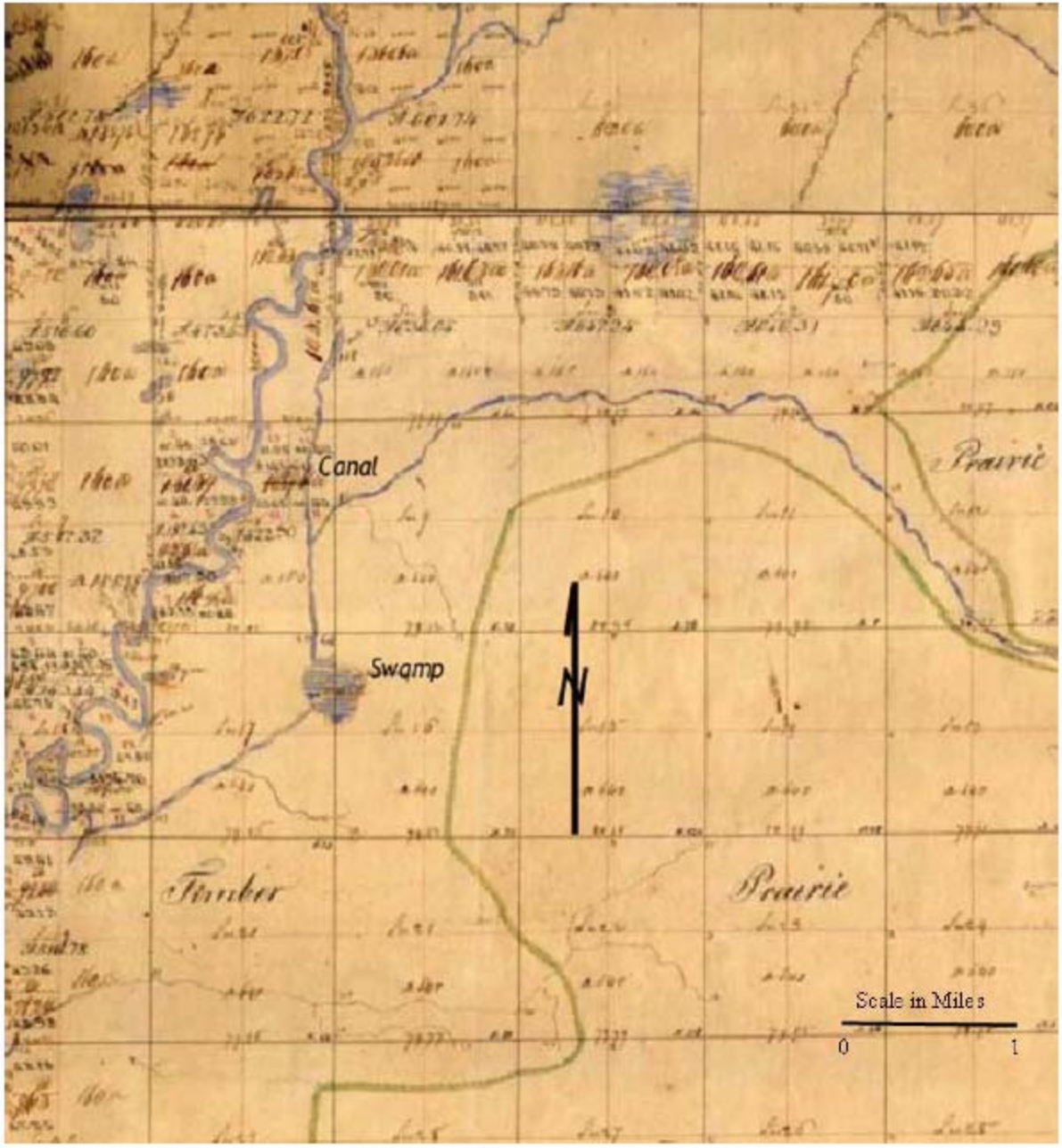
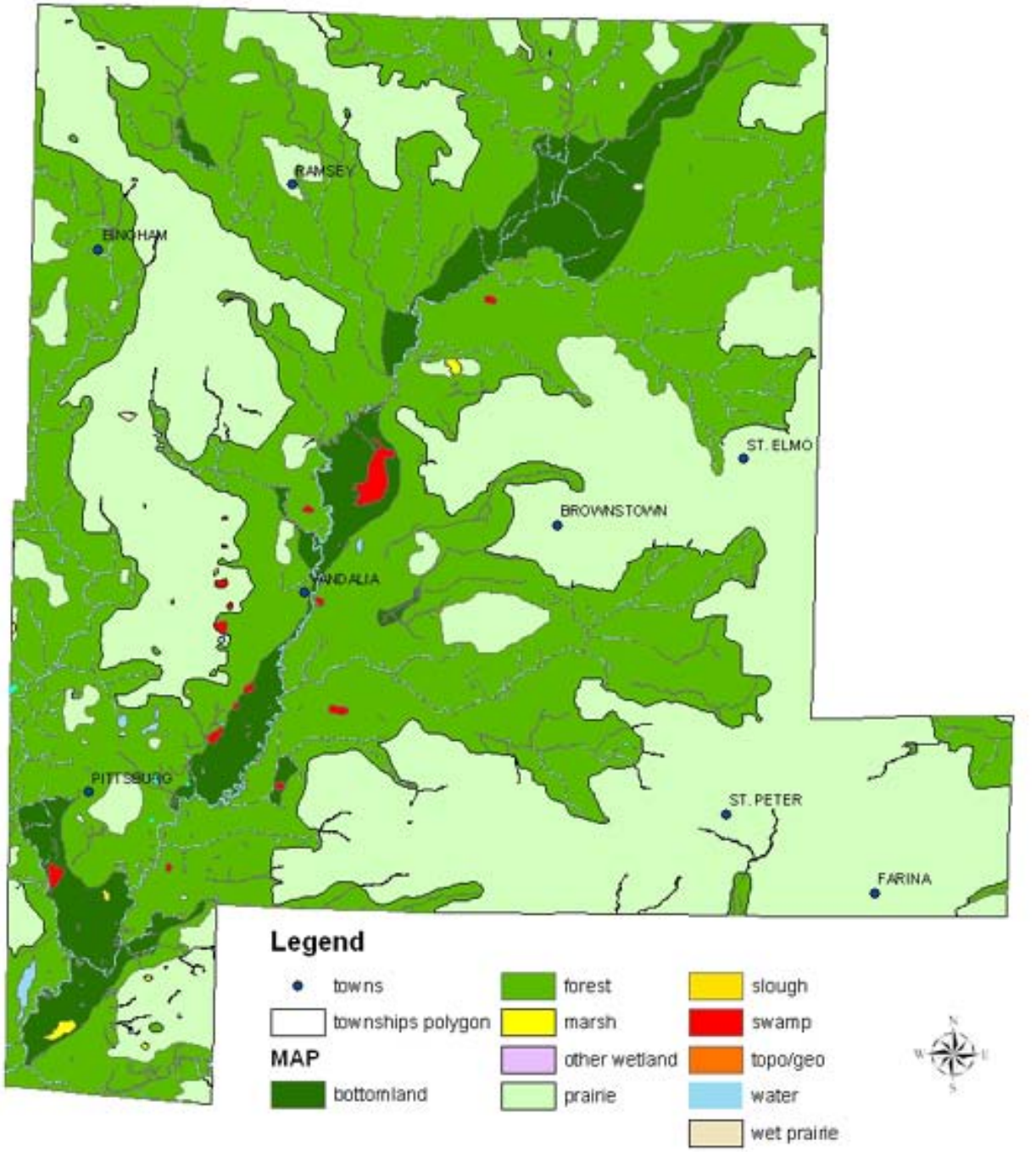
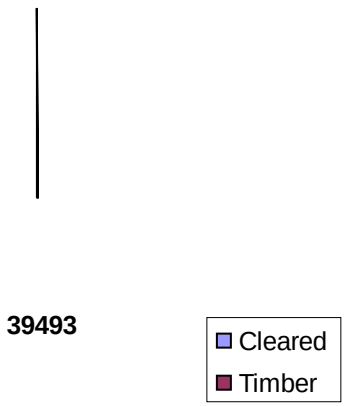


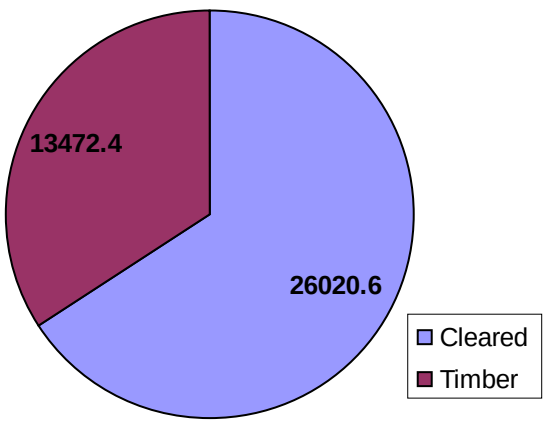
Figure 25: 1820 GLO Survey, Kaskaskia River South of Vandalia, Illinois


RAMSEY
BINGHAM
ST. ELMO
BROWNSTOWN
VANDALIA
PITTSBURG
ST. PETER
FARINA
Legend
towns
townships polygon
MAP
bottomland
forest
marsh
other wetland
prairie
slough
swamp
topo/geo
water
wet prairie
N
W
E
S
0
37,500
75,000
150,000
Feet

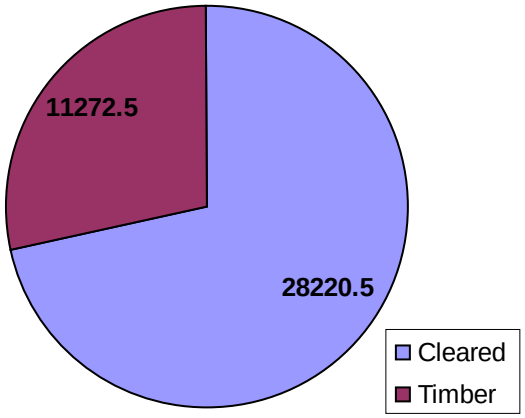
Total Floodplain Area in Acres: 1820
Mile 0-50



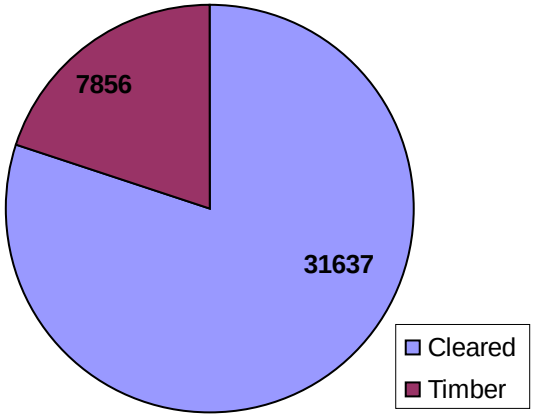
Total Floodplain Area in Acres: 1938
Mile 0-50



Total Floodplain Area in Acres: 1966
Mile 0-50



Total Floodplain Area in Acres: 1998
Mile 0-50



The Bullshark, The Most Aggressive of the Shark Species

85 lb Bull shark was caught by fisherman in the Mississippi River in 1937, caught in what following location?

New Orleans, Louisiana

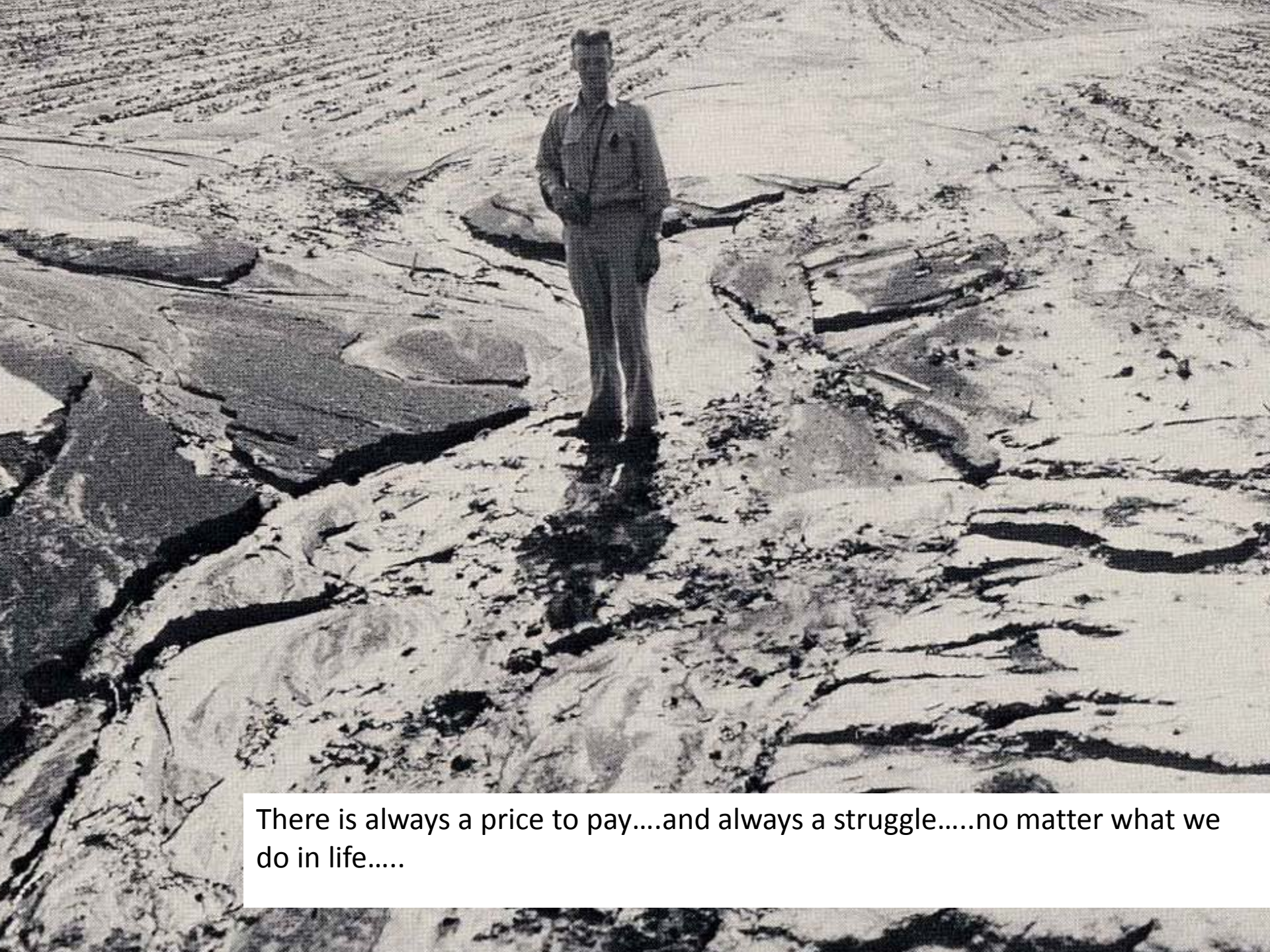
Natchez, Mississippi

Helena, Arkansas

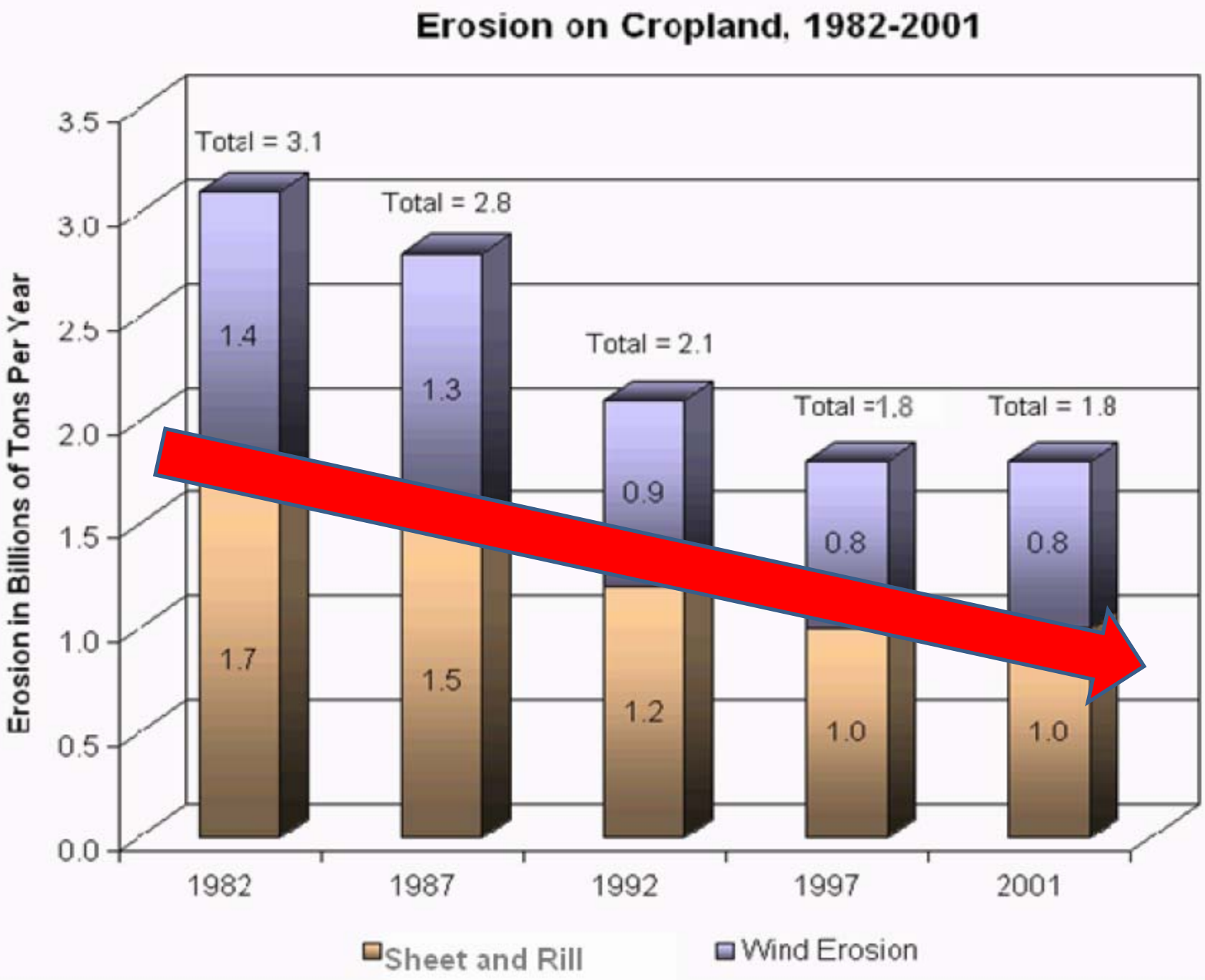
Memphis, Tennessee

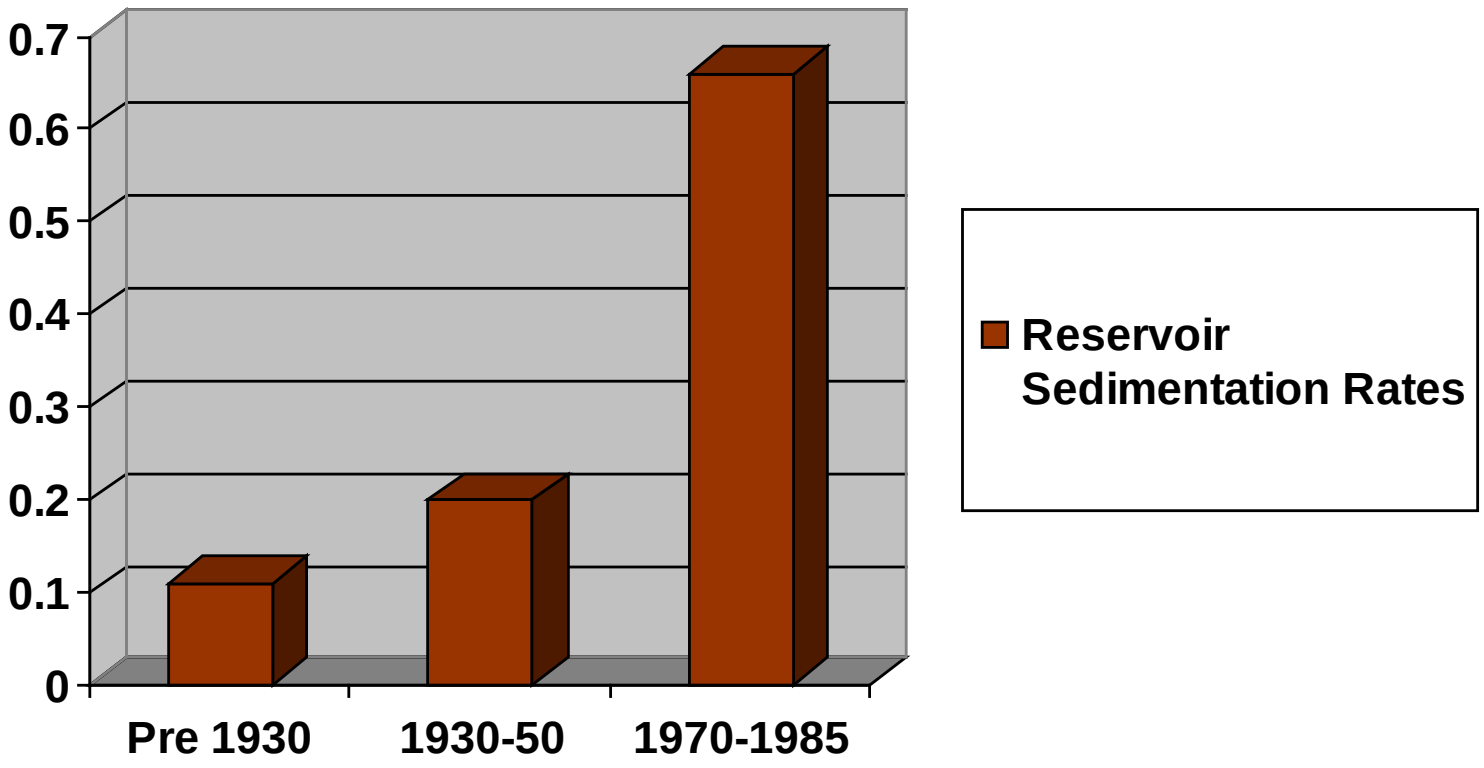
St. Louis, Missouri

Alton, Illinois

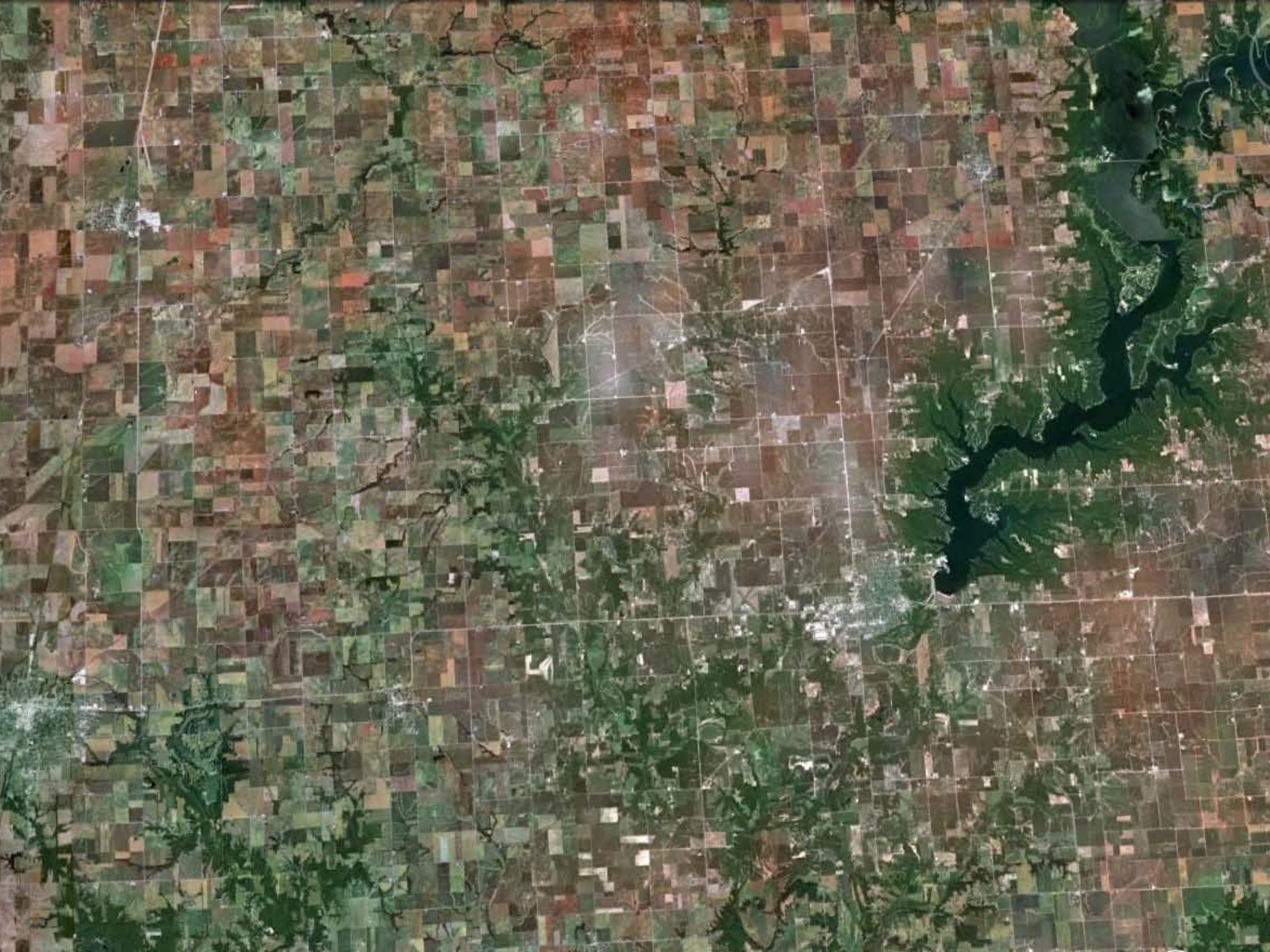


There is always a price to pay….and always a struggle…..no matter what we do in life…..

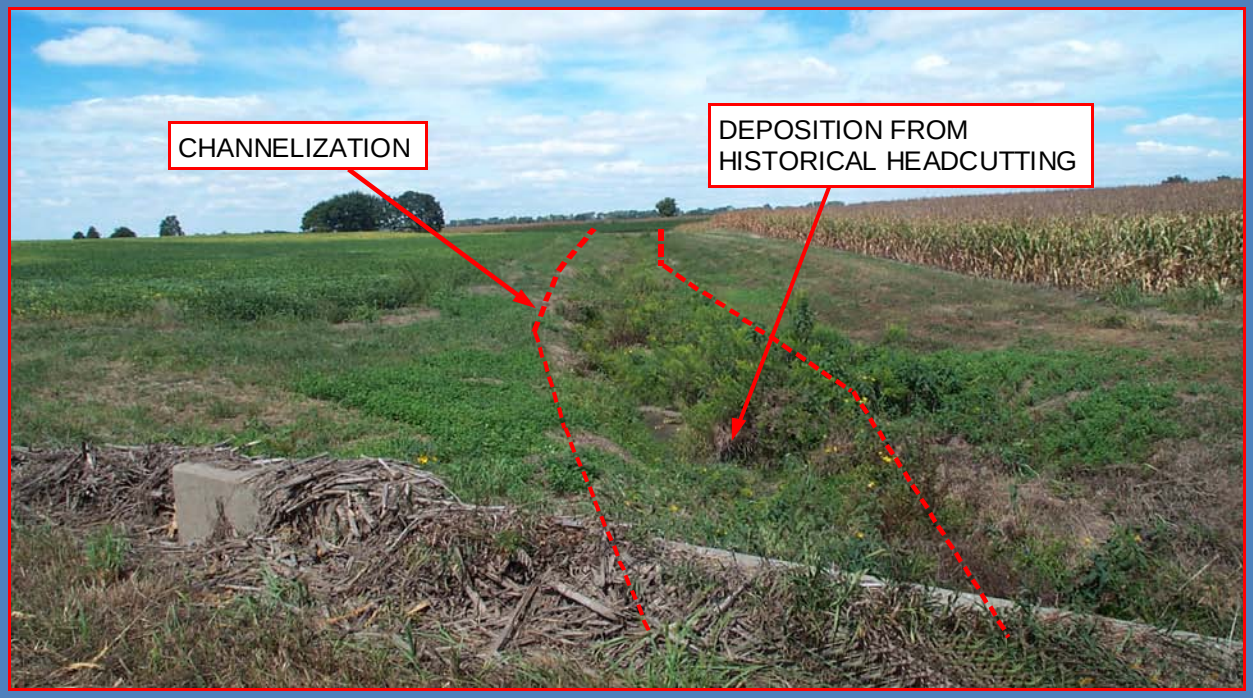

Erosion on Cropland, 1982-2001
Erosion in Billions of Tons Per Year
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Total = 3.1
Total = 2.8
Total = 2.1
Total =1.8
Total = 1.8
1.4
1.3
0.9
0.8
0.8
1.7
1.5
1.2
1.0
1.0
1982
1987
1992
1997
2001
Sheet and Rill
Wind Erosion

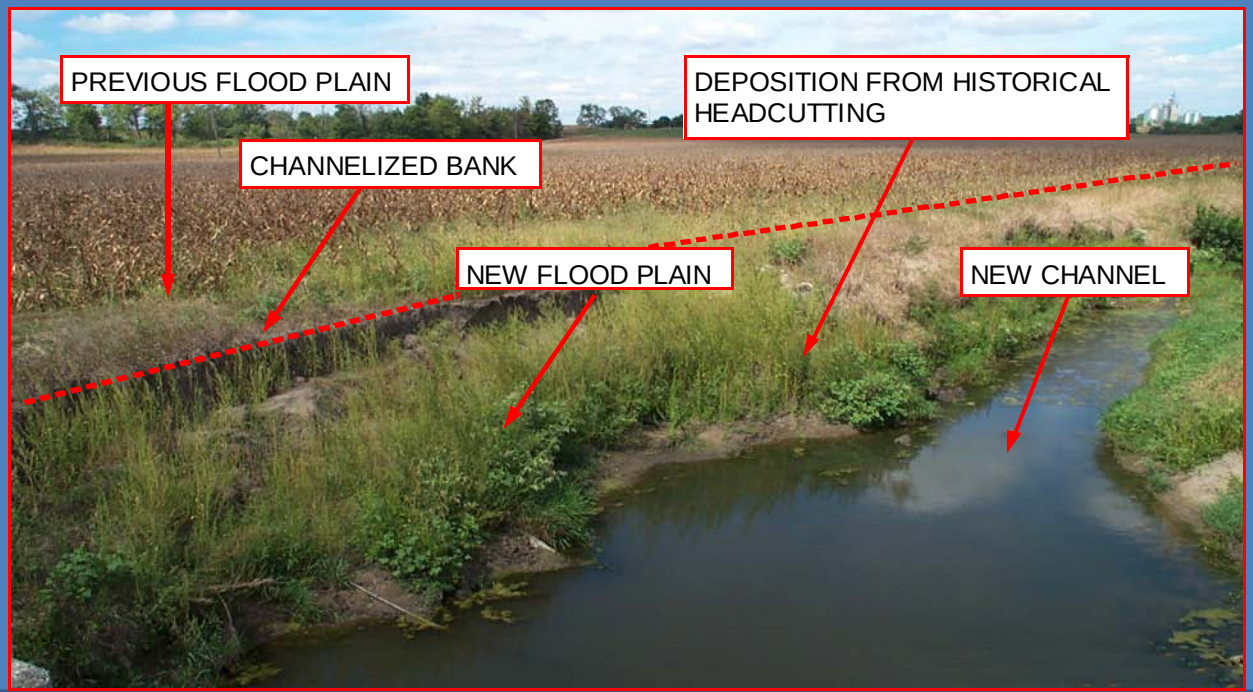


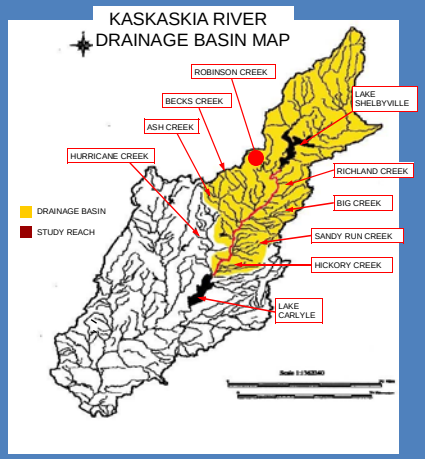
United States Reservoir Sedimentation Rates, in acre feet per square mile per year (NRCS 1995).

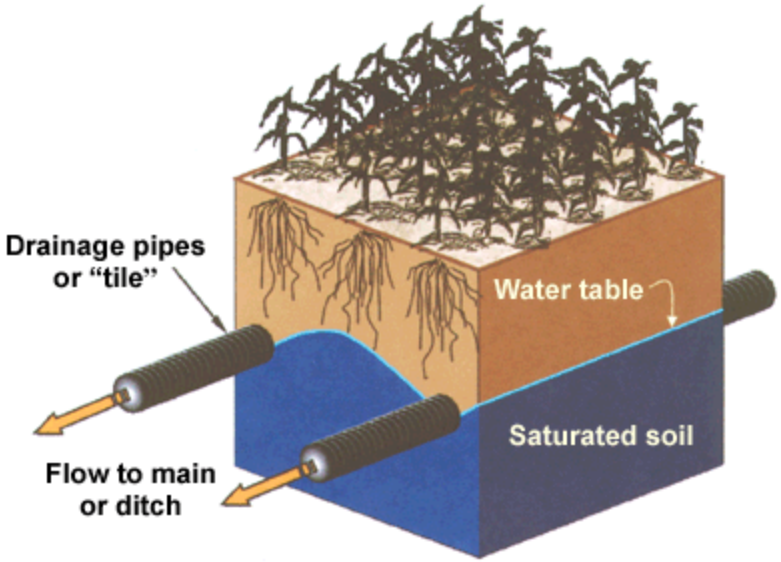


Upper Robinson Creek





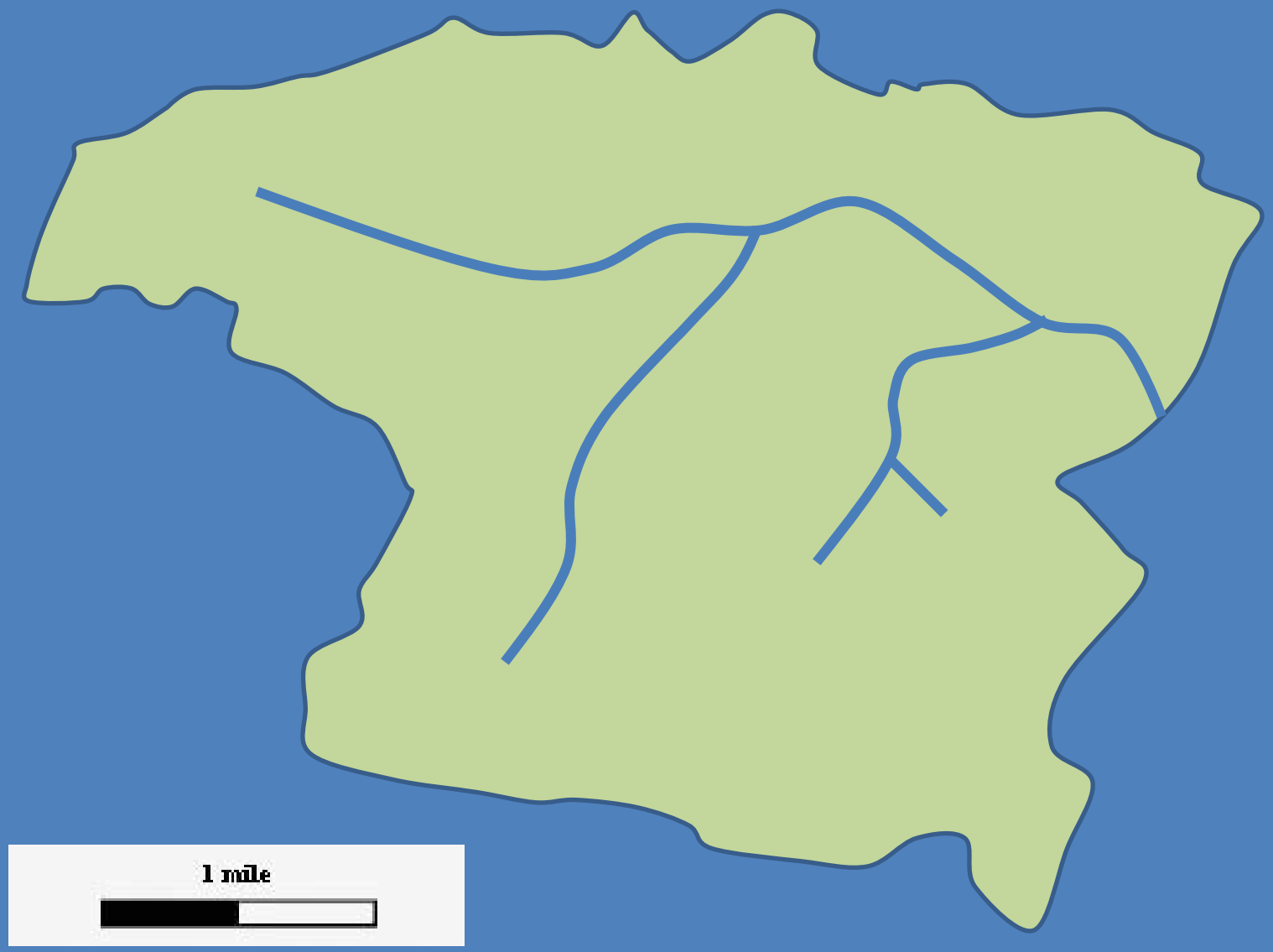




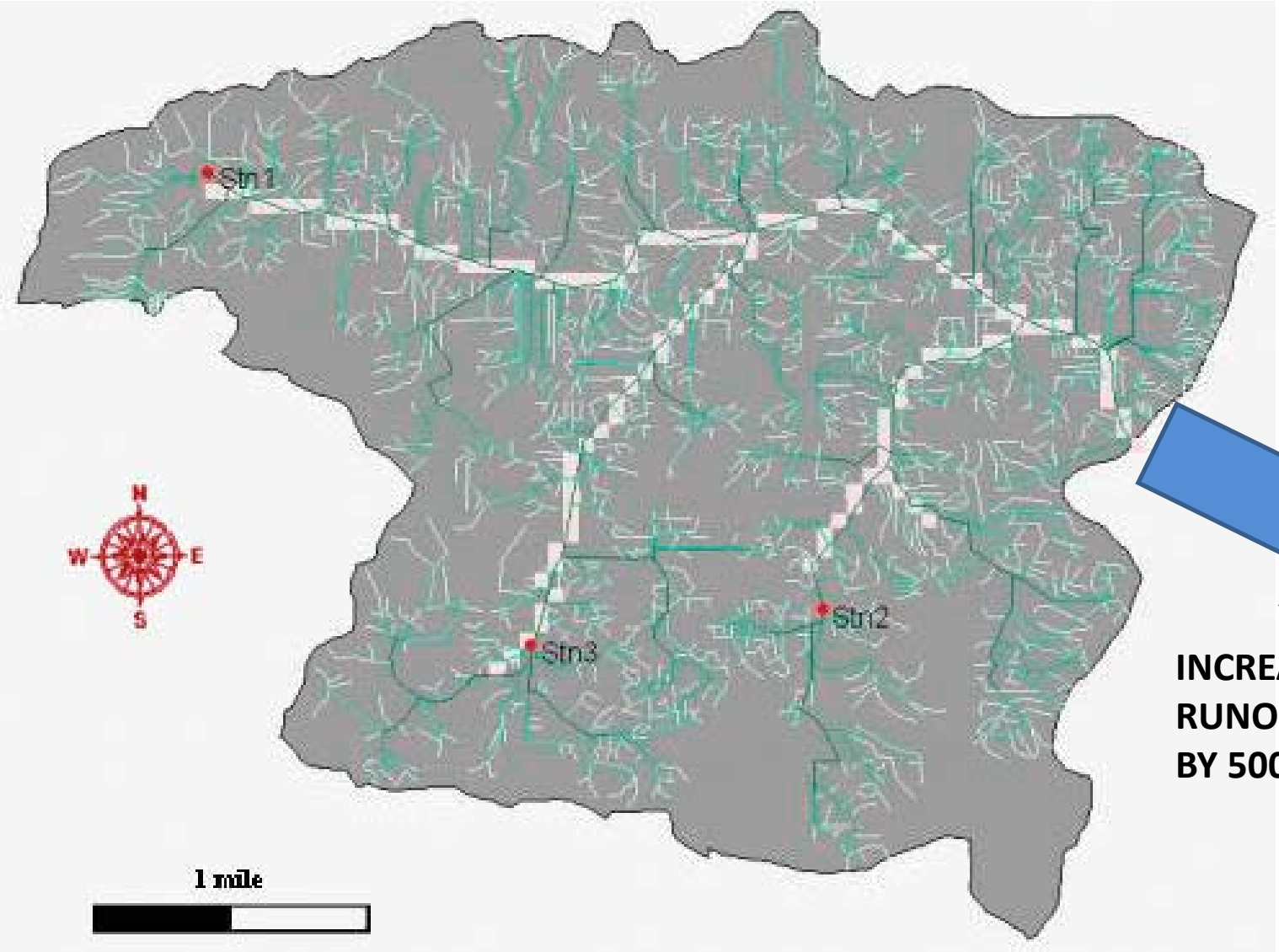
IMPROVING DRAINAGE AND INCREASING CROP YEILD

by 1880, there were over 1000 drain tile factories located throughout the Midwest

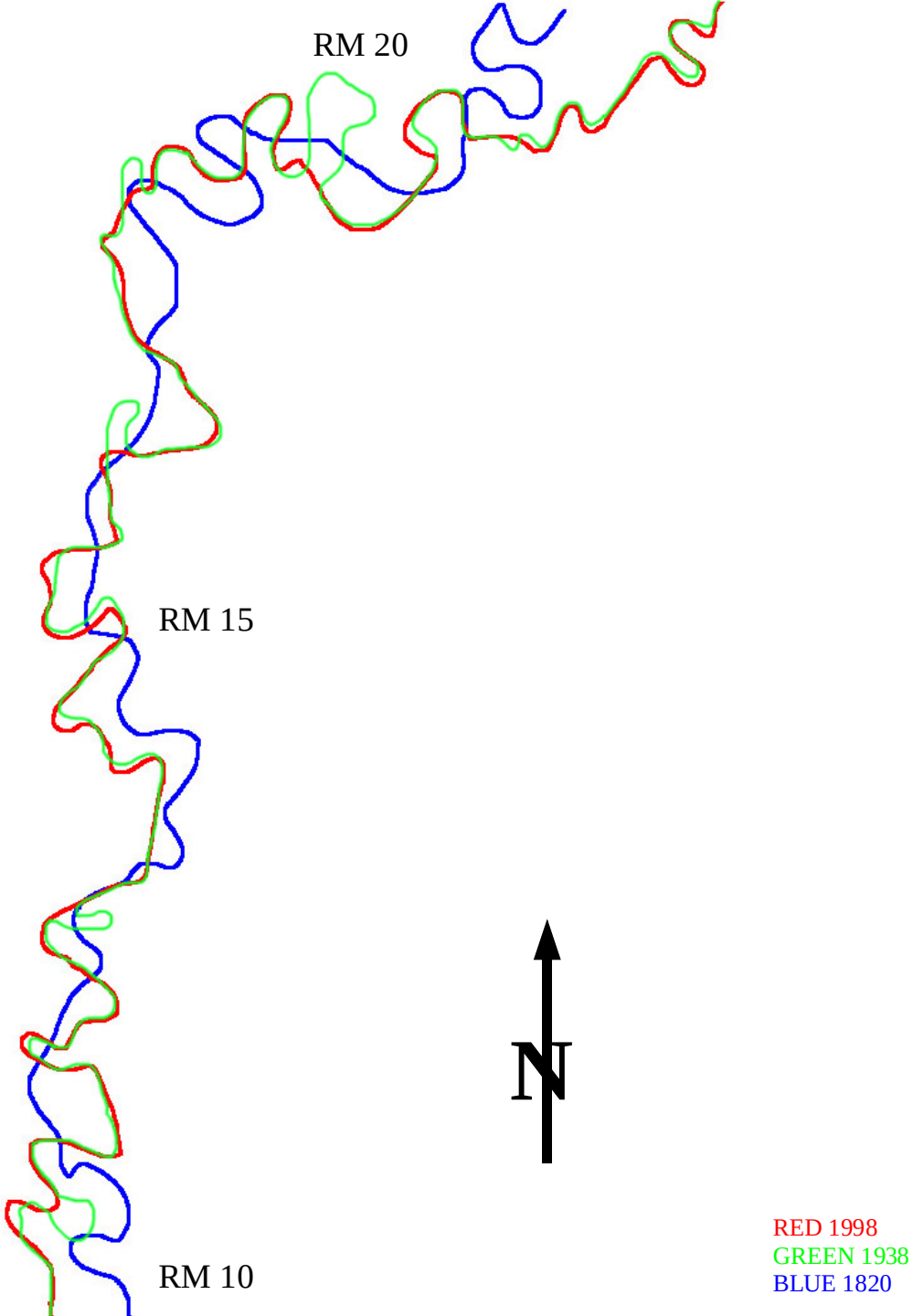
Upper Little Vermilion River



Upper Little Vermilion River

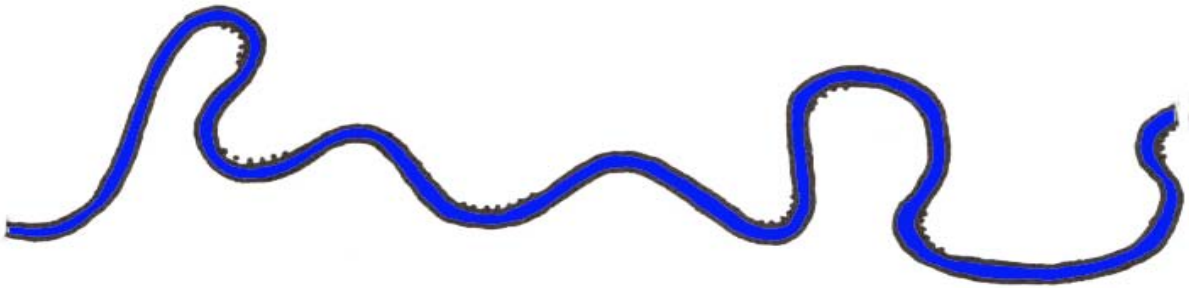


INCREASE RUNOFF TIME BY 500%


RM 20
RM 15
RM 10
N
RED 1998
GREEN 1938
BLUE 1820

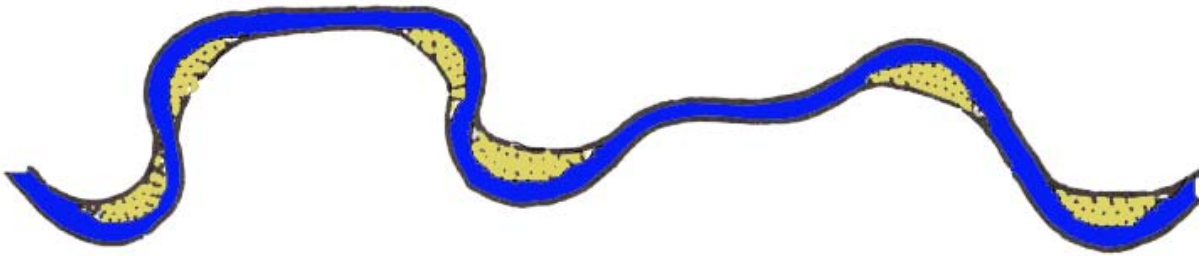
A stalling river….it’s mind and energy are changing

1938



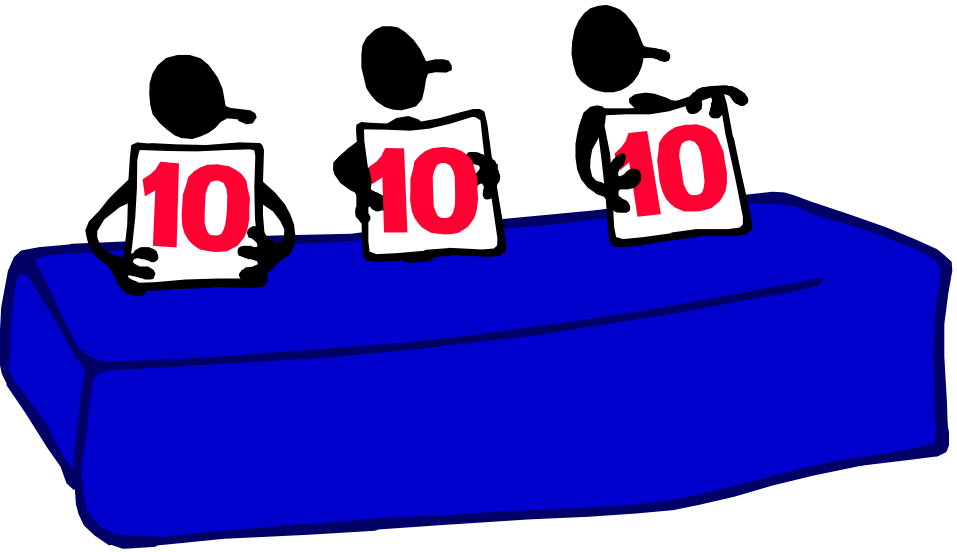
Sinuous Canaliform

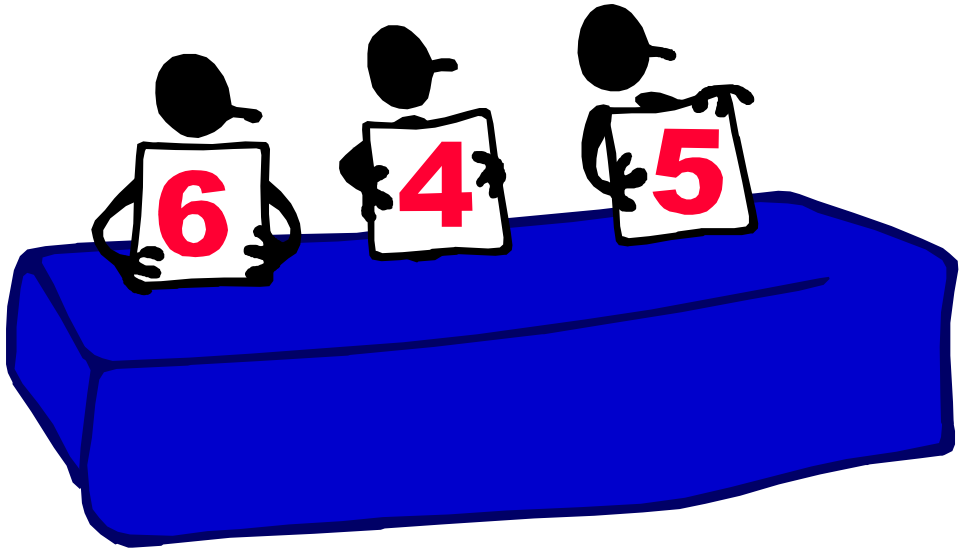
1998



Sinuous Braided Canaliform

The State of the Kaskaskia River





What Kind of Mississippi River Fish is This?

Guppy Clownfish

Paddlefish Shark Carp

Plan A. Do Nothing

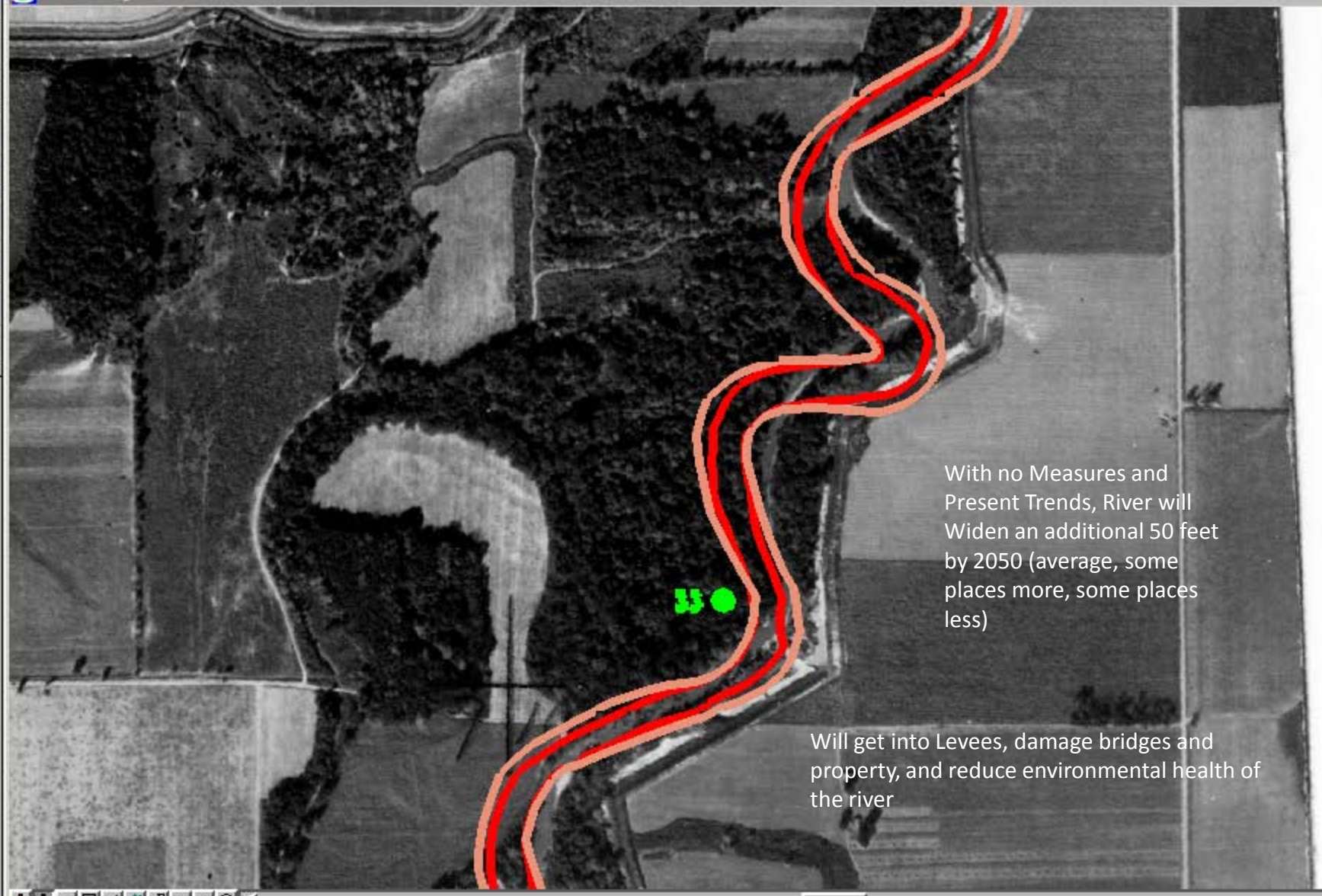
View Tools Options Contrast Geometry Spatial Applications Help

ay complete
C OPEN

9.225 x 9.442 inch, 600.000 dpi
Enter zoom center point

34 0 0

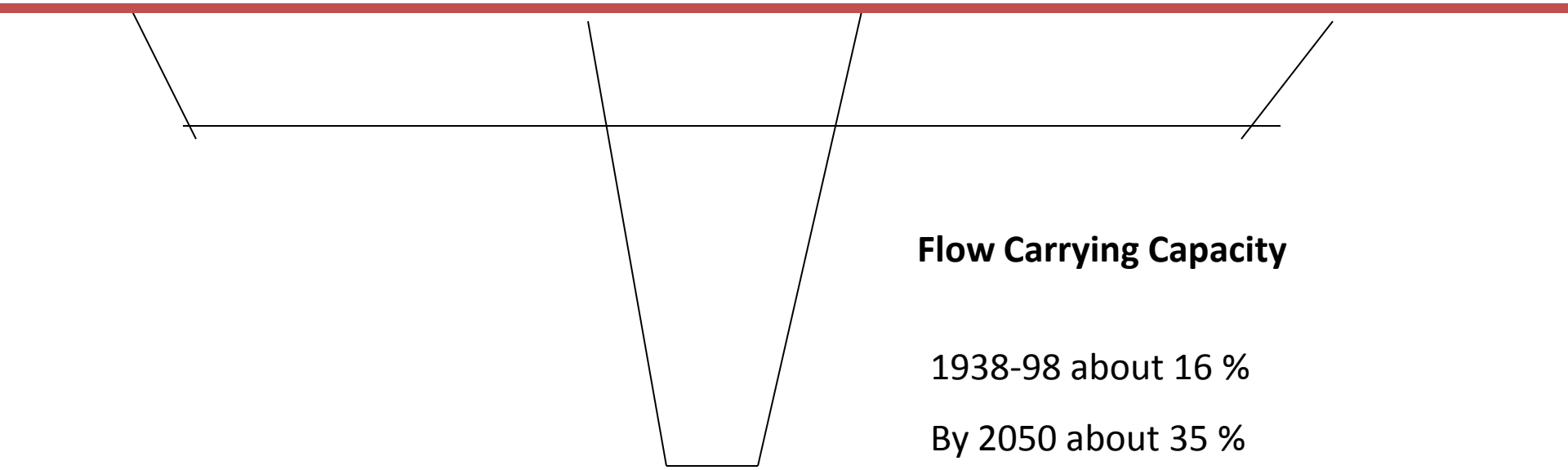
View 4 - bgl1186.ext



1

POSSIBLE LOCATION FOR FUTURE
AGRICULTURAL LEVEE FAILURES

Loss of Flood Protection

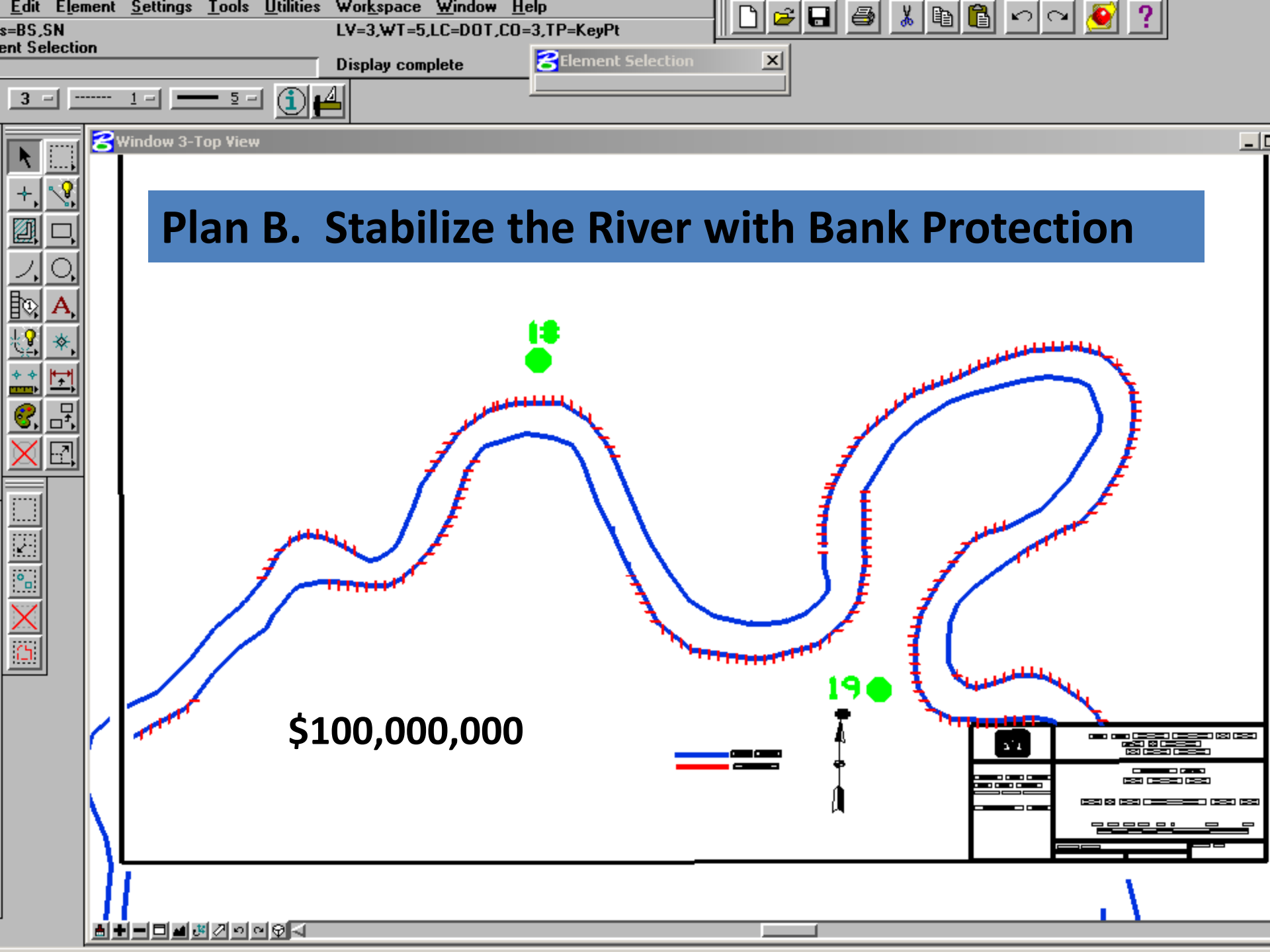


Flow Carrying Capacity

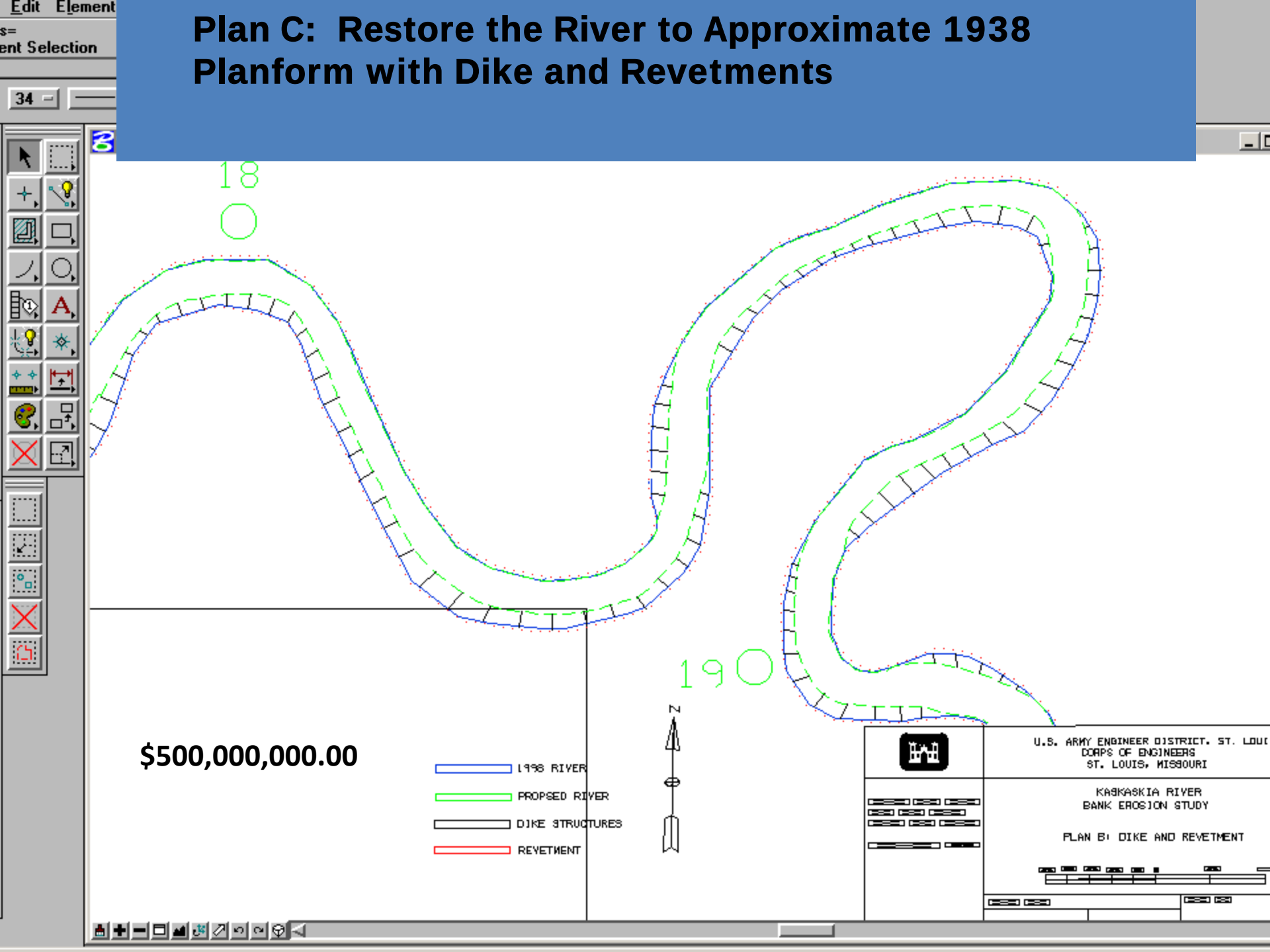
1938-98 about 16 %

By 2050 about 35 %

Plan B. Stabilize the River with Bank Protection

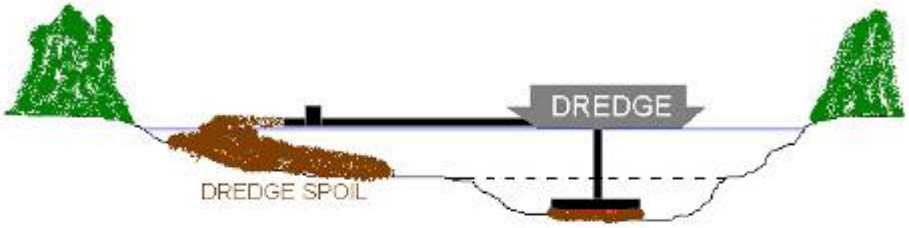


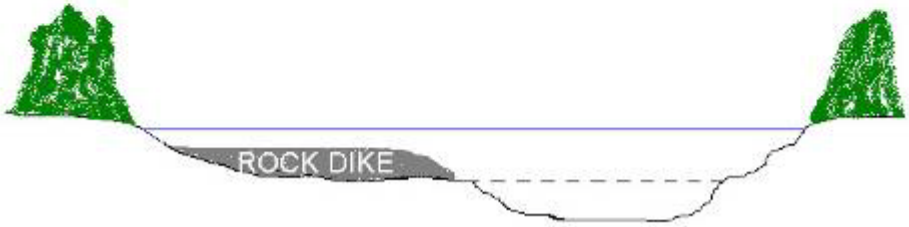
Plan C: Restore the River to Approximate 1938 Planform with Dike and Revetments



$500,000,000.00

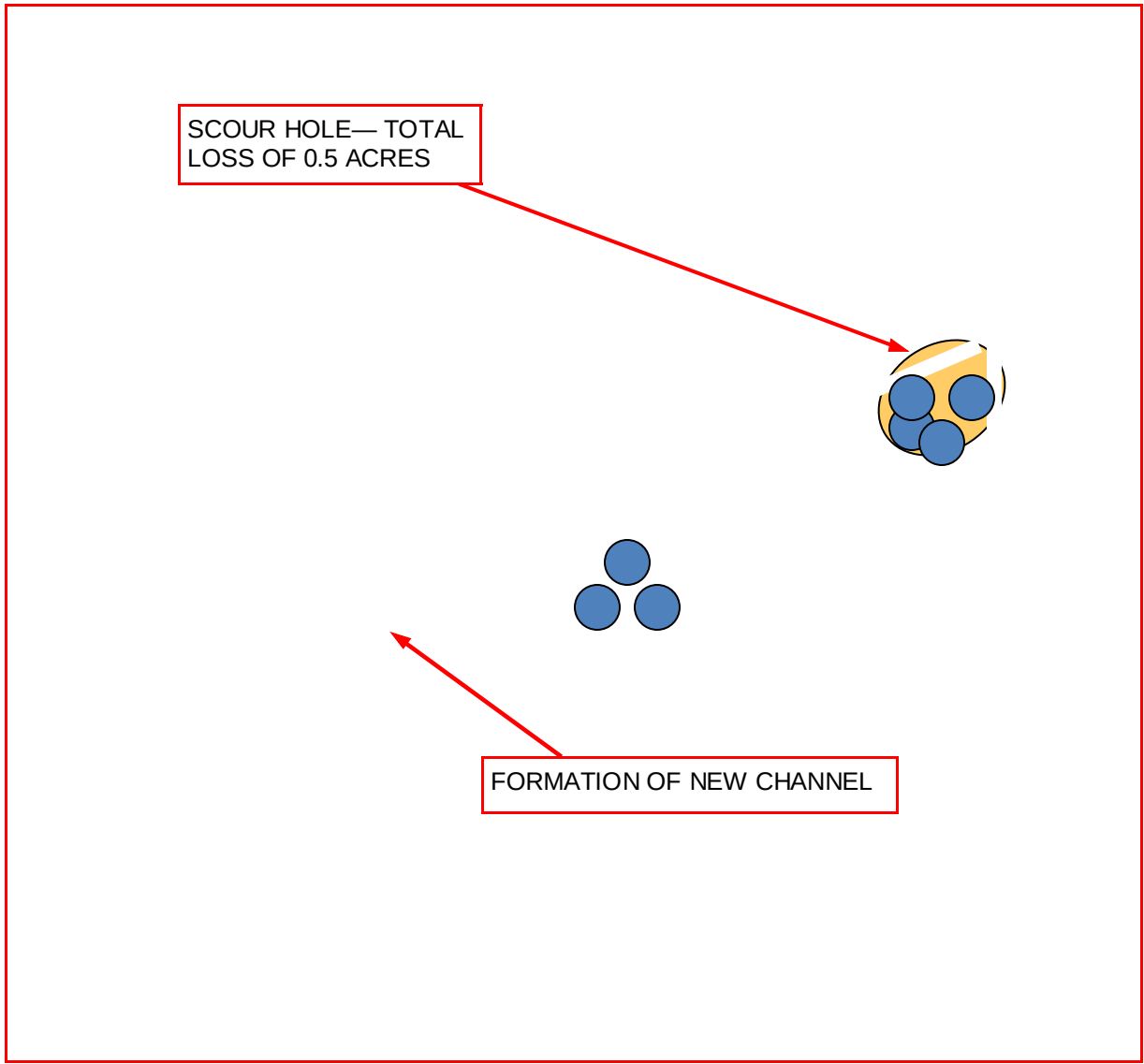
PLAN D: DREDGING





Plan E: Establishment of Riparian Corridor or Buffer Strips

for Overbank Scour



Look For Immediate Congressional Funding for:

Revising Old Study with New Data

Environmental Restoration of the River

Demonstration Erosion Control Project for a Larger River (not a stream)

Flood Control Study and Improvements

DEMONSTRATION EROSION CONTROL PROJECT
YAZOO RIVER BASIN , MISSISSIPPI

1983-Present

Total Appropriation $430,000,000.00

Covers Studies, Construction, and Monitoring

16 Watersheds within the Yazoo Basin

REP JAMIE WHITTEN

Flying Torpedo SeaBass

Fake Picture Asian Carp