

Sediment Budget and Trends in Sediment Delivery for the Last 30 Years in the Illinois River Basin

by

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and

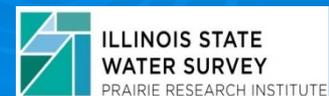
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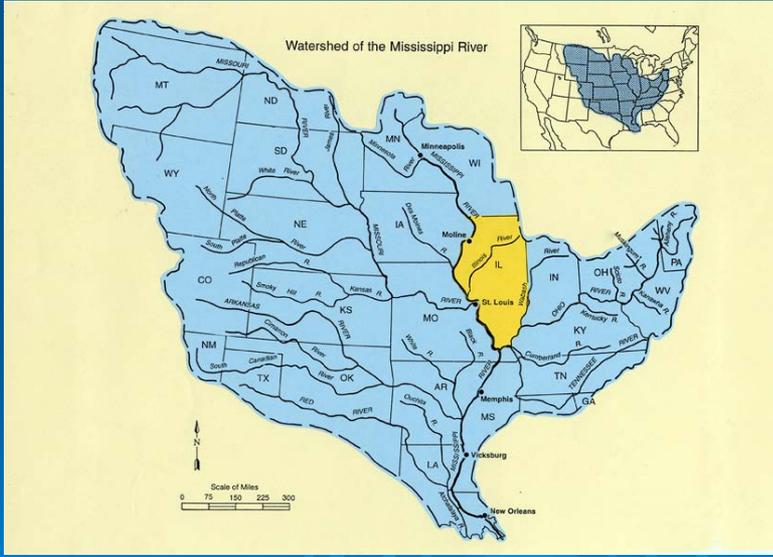
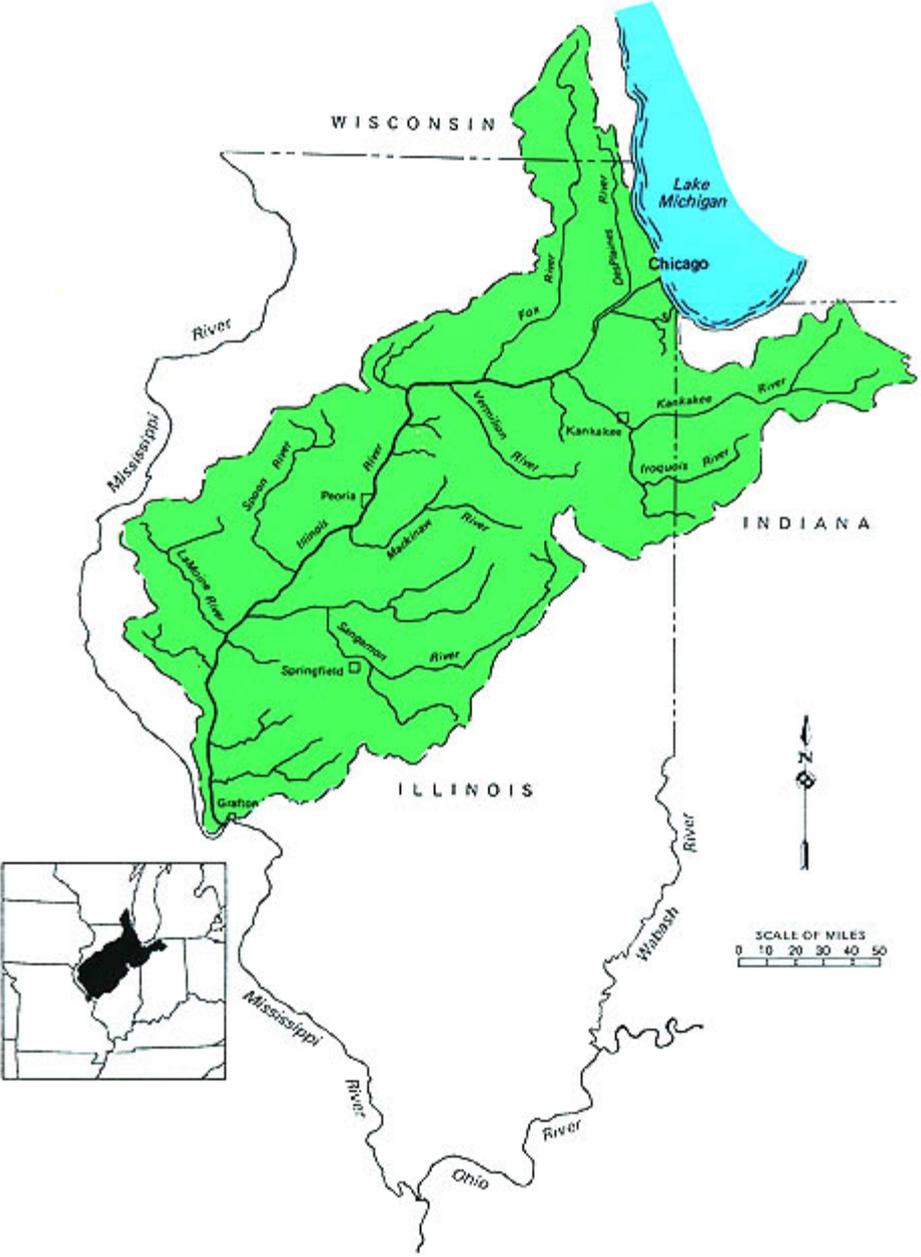


Outline

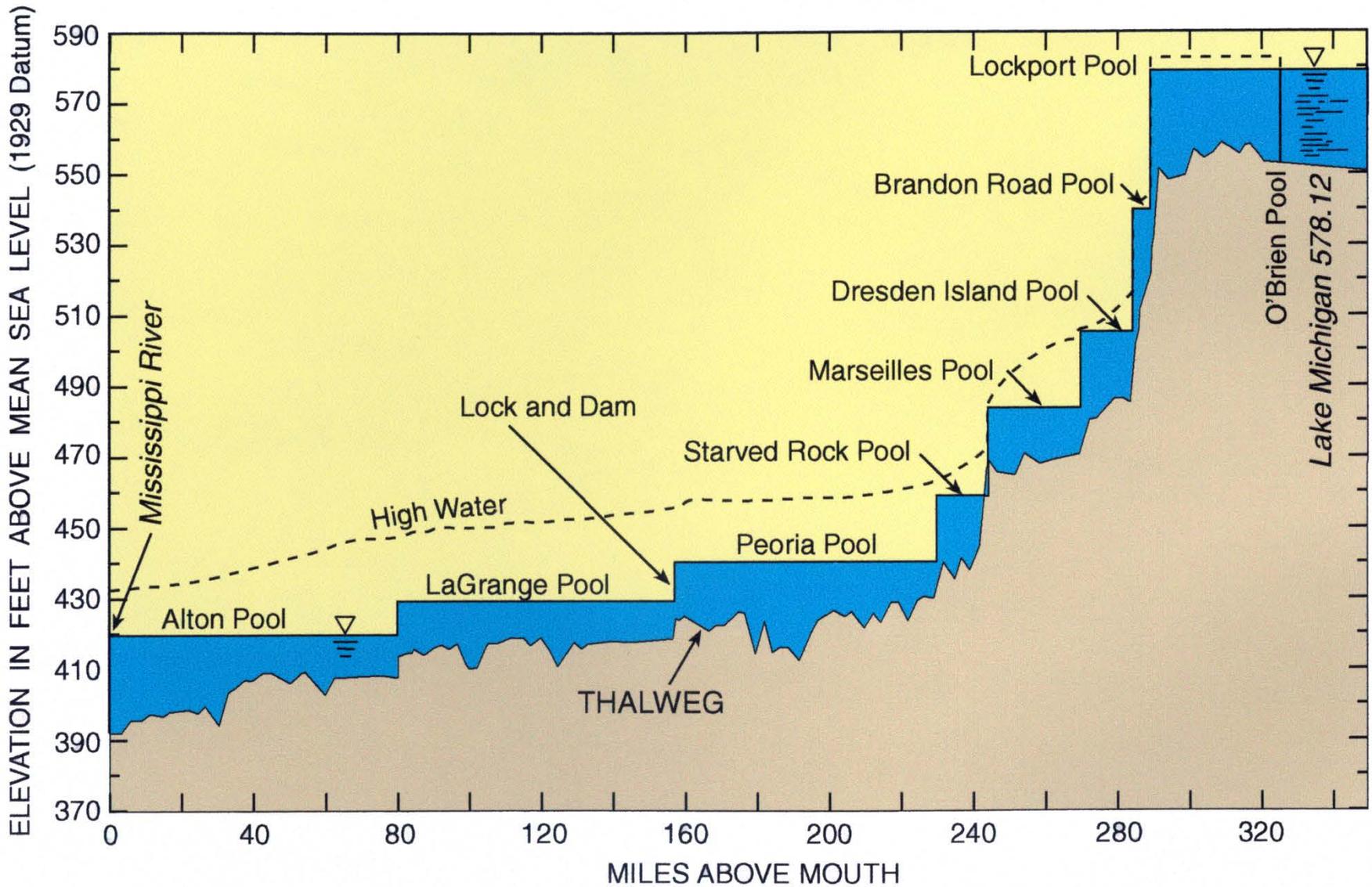
- Background
- Sedimentation Issues in the Illinois River
- Sediment Budget



Location of Illinois River Basin



PROFILE OF THE ILLINOIS RIVER WATERWAY



Background

- The Illinois River is one of the major tributaries of the Mississippi River.
- The Illinois River valley (that includes the main river, backwater lakes, side channels, and floodplain) is a significant ecological resource in the nation.
- Many bottomland lakes along the river valley have lost much of their capacity to sediment accumulation.

Background

(concluded)

- Erosion and sedimentation has long been recognized as the principal causes for most of the environmental and ecological problems in the Illinois River valley.
- At the present there are many initiatives including the Illinois Rivers 2020, Illinois River Conservation Enhancement Program (CREP), and several others that are addressing the erosion and sedimentation problem in the Illinois River watershed.
- The sediment budget analysis is one of the critical information used for identifying and prioritizing projects in the basin.



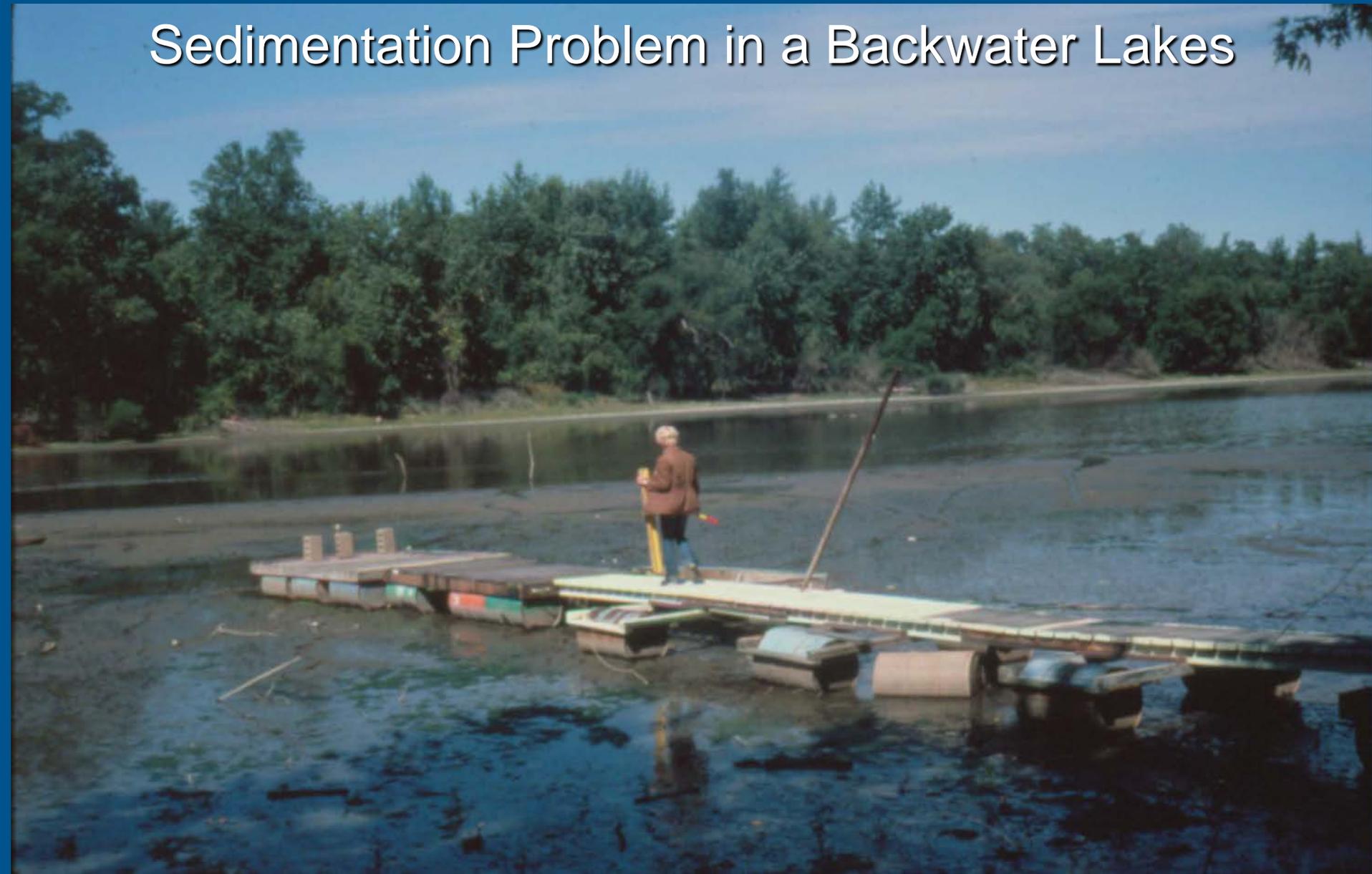
Bank Erosion along the Right Side (Looking Downstream) of Richland Creek
(This erosion site has subsequently been stabilized with bioengineering techniques.)



Partridge Creek Delta



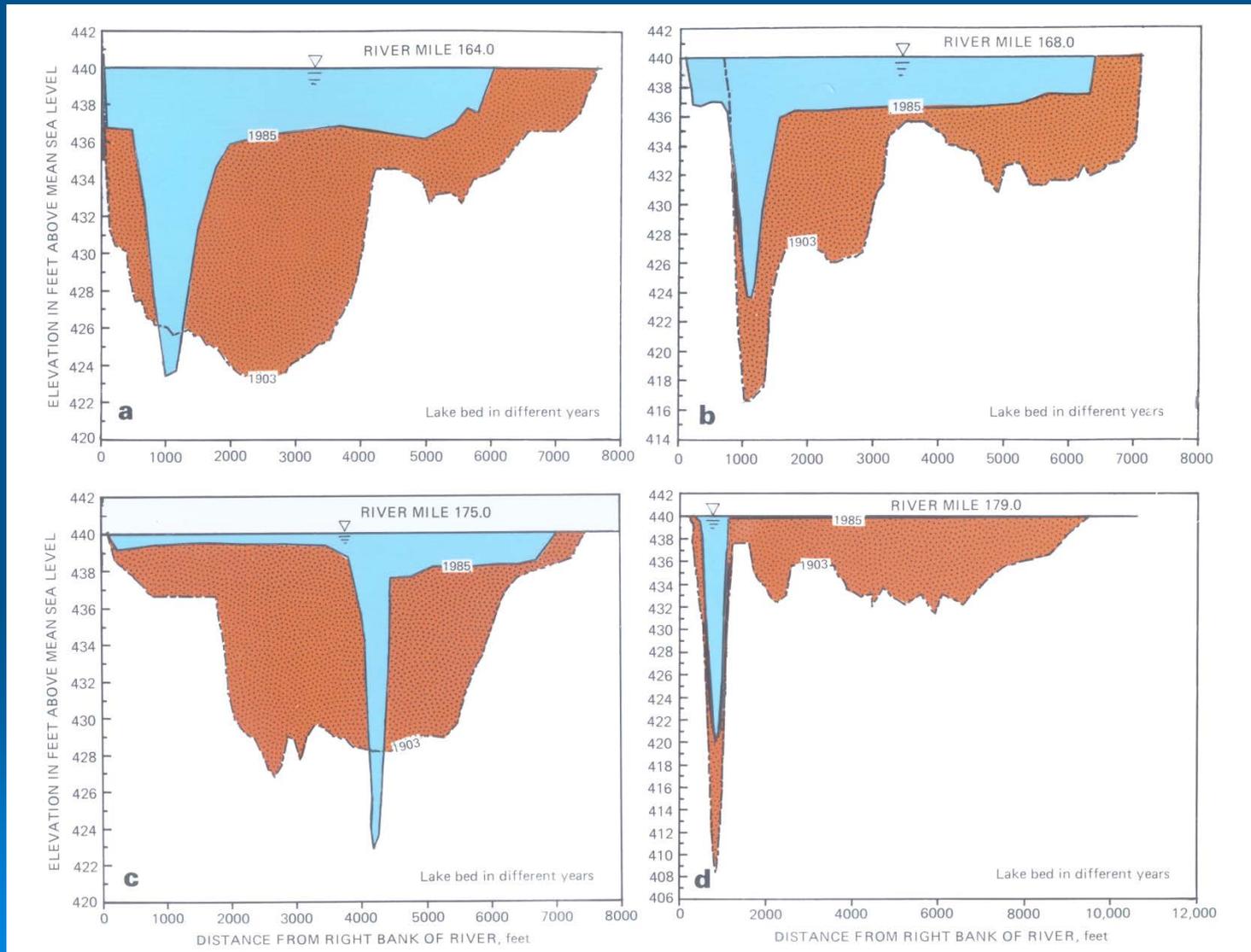
Sedimentation Problem in a Backwater Lakes

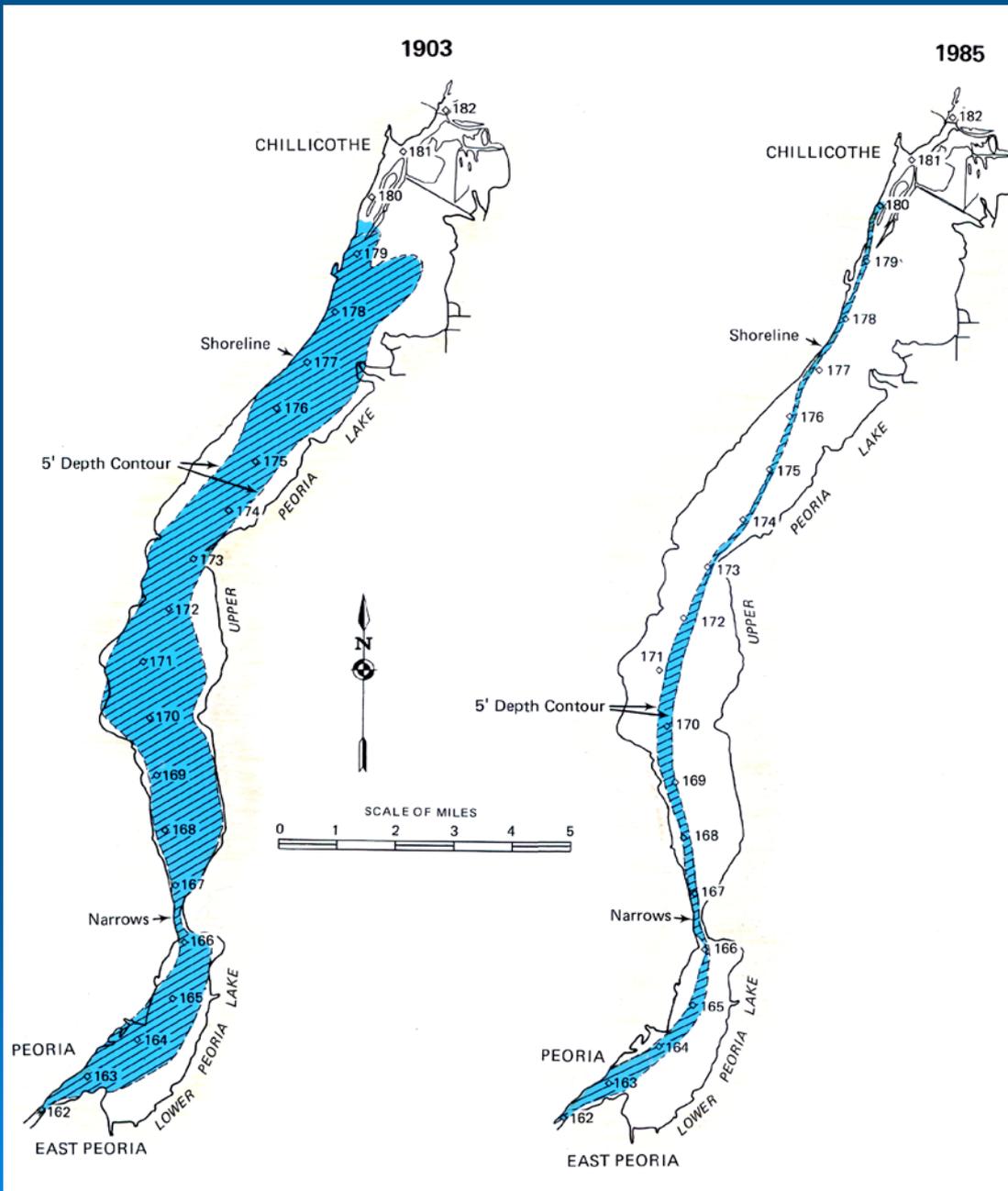


Backwater Sedimentation



Sedimentation Pattern in Peoria Lake

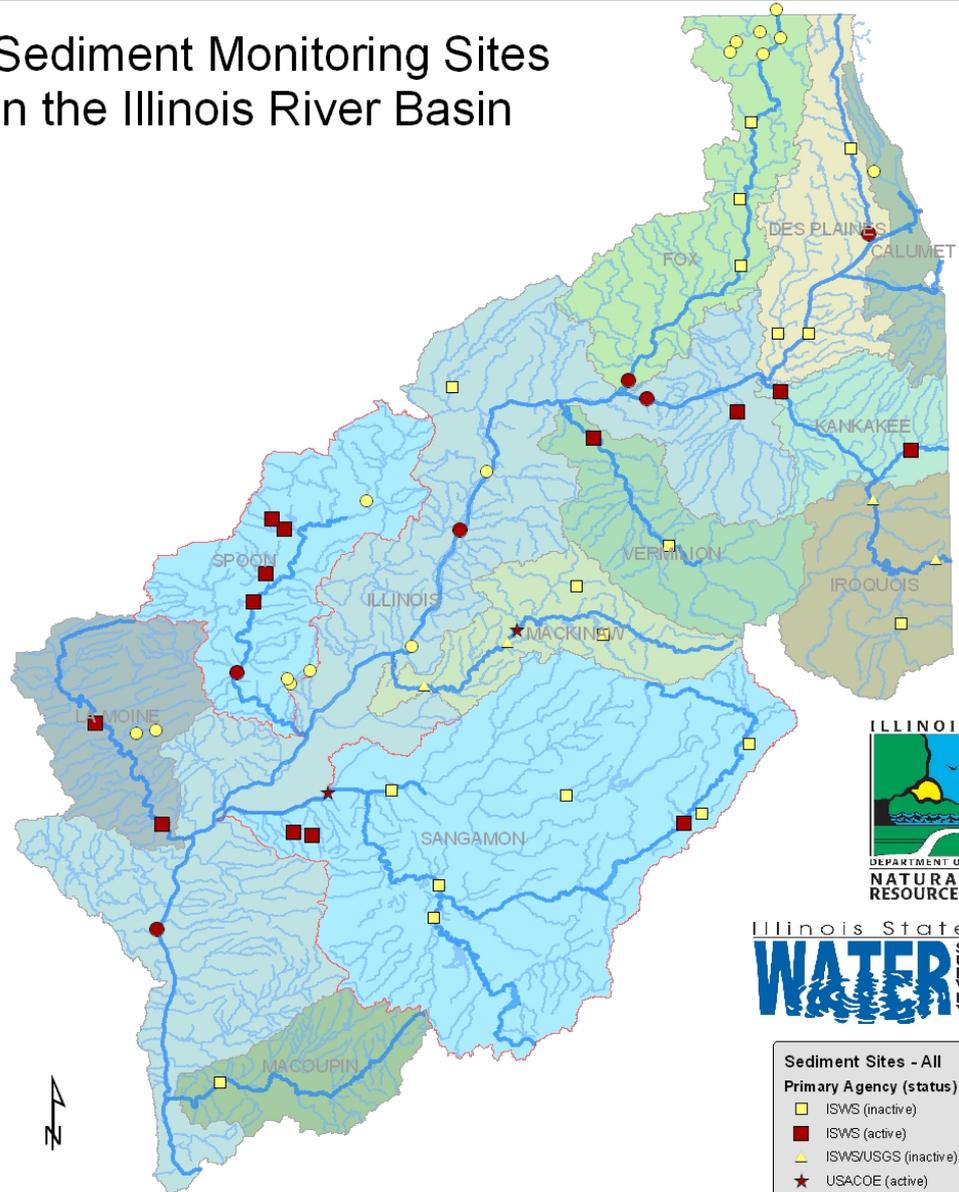




Changes in Water Depths between 1903 and 1985



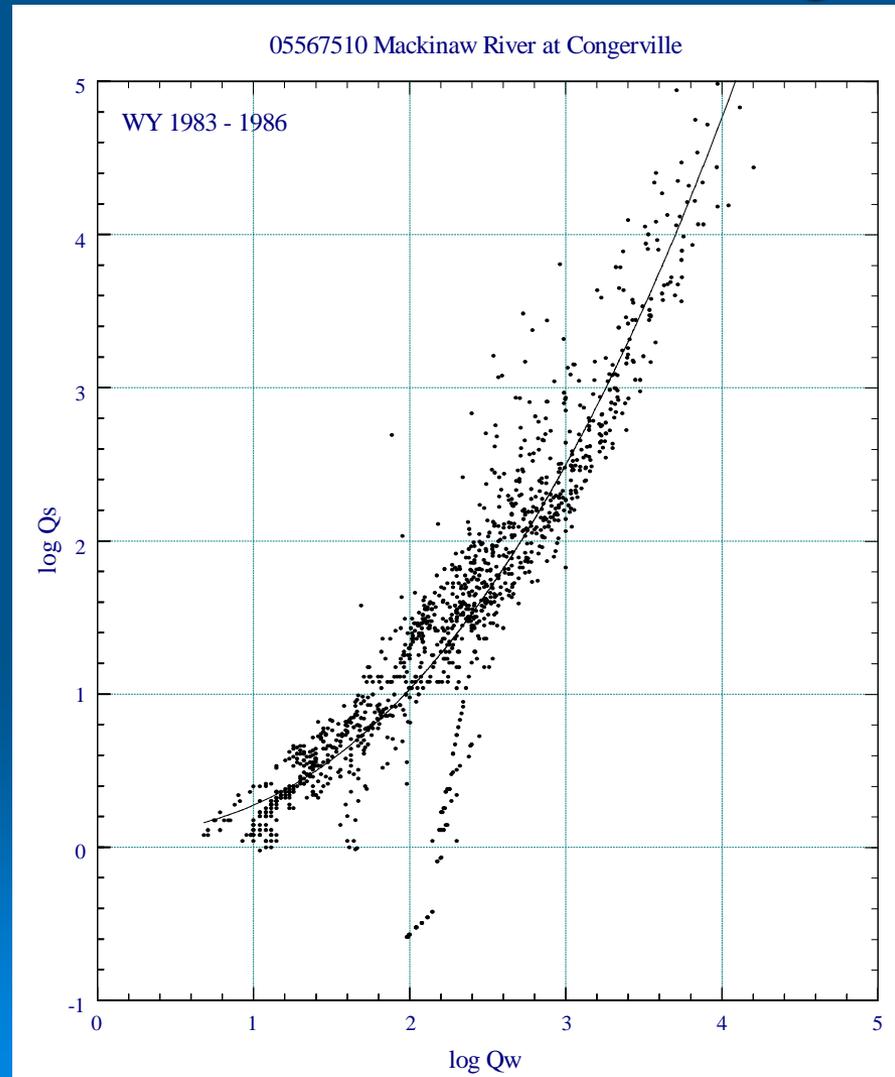
Sediment Monitoring Sites in the Illinois River Basin



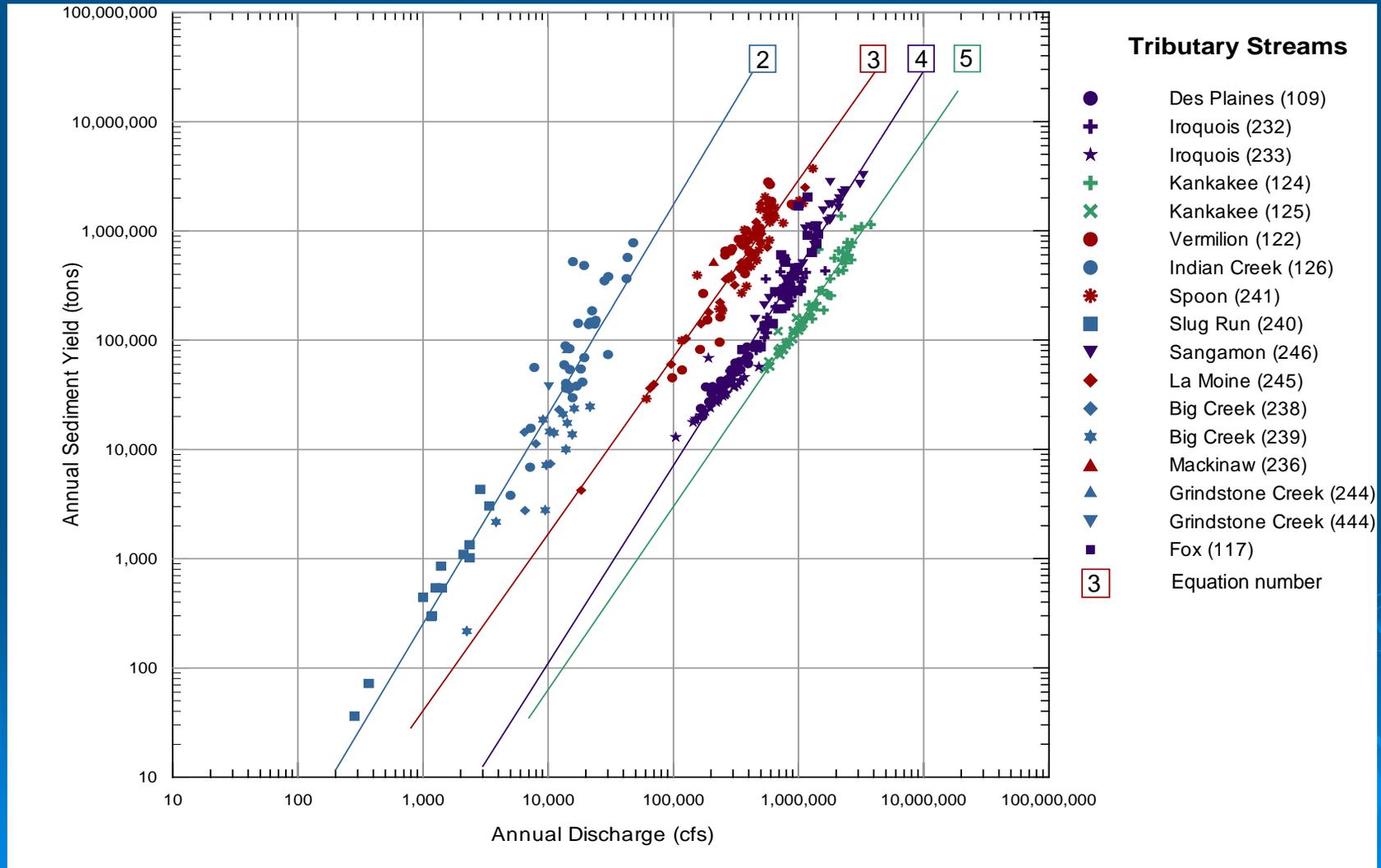
- Sediment Sites - All Primary Agency (status)**
- ISWS (inactive)
 - ISWS (active)
 - ▲ ISWS/USGS (inactive)
 - ★ USACOE (active)
 - USGS (inactive)
 - USGS (active)
 - Major Rivers
 - Tributaries

Scale 1:1,879,996
 0 5 10 20 30 40 Miles
 12/16/03 - J.C.J.

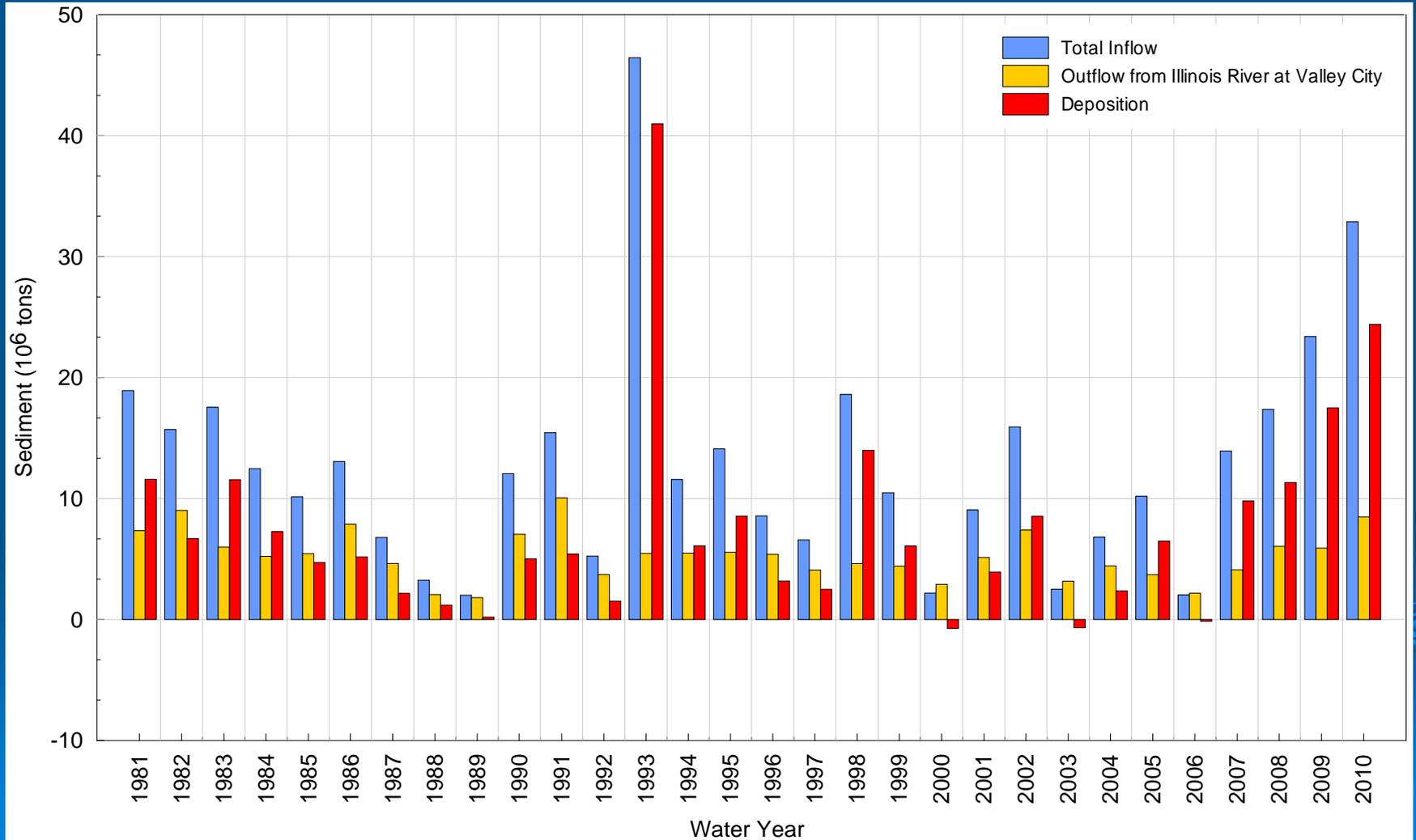
Sediment Rating Curve for Mackinaw River at Congerville



Annual Sediment Yield Equations for Tributary Streams in the Illinois River Valley



Sediment Inflow, Outflow, and Deposition



Sediment Budget of the Illinois River Valley

1981-2000

Sediment Input:
12.1 million tons
per year

Sediment Deposition
within the Illinois
River Valley:
6.7 million tons
per year

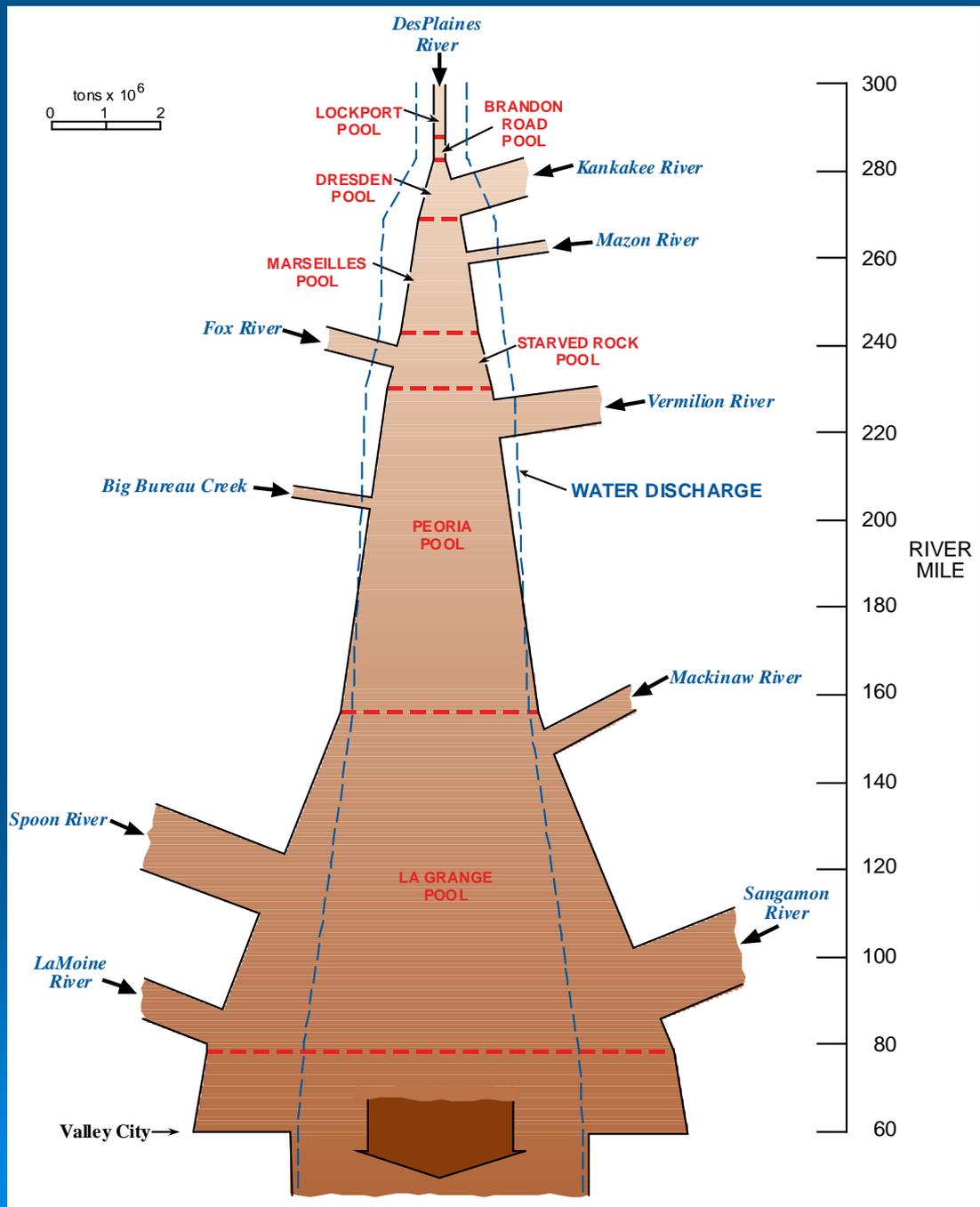
Sediment
Outflow
at Valley City:
5.4 million
tons per year

1981-2010

Sediment Input:
12.8 million tons
per year

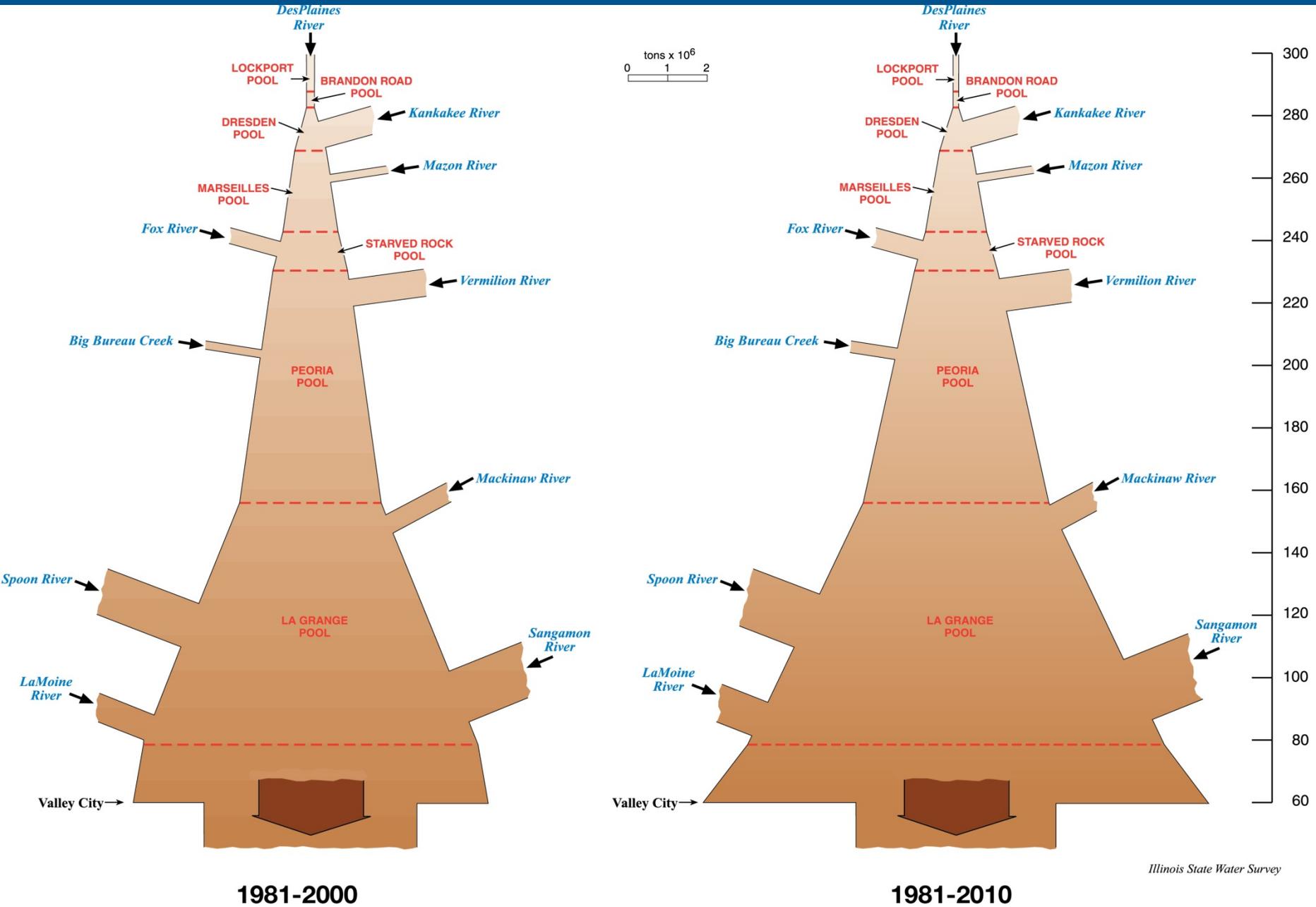
Sediment Deposition
within the Illinois
River Valley:
7.6 million tons
per year

Sediment
Outflow
at Valley City:
5.3 million
tons per year



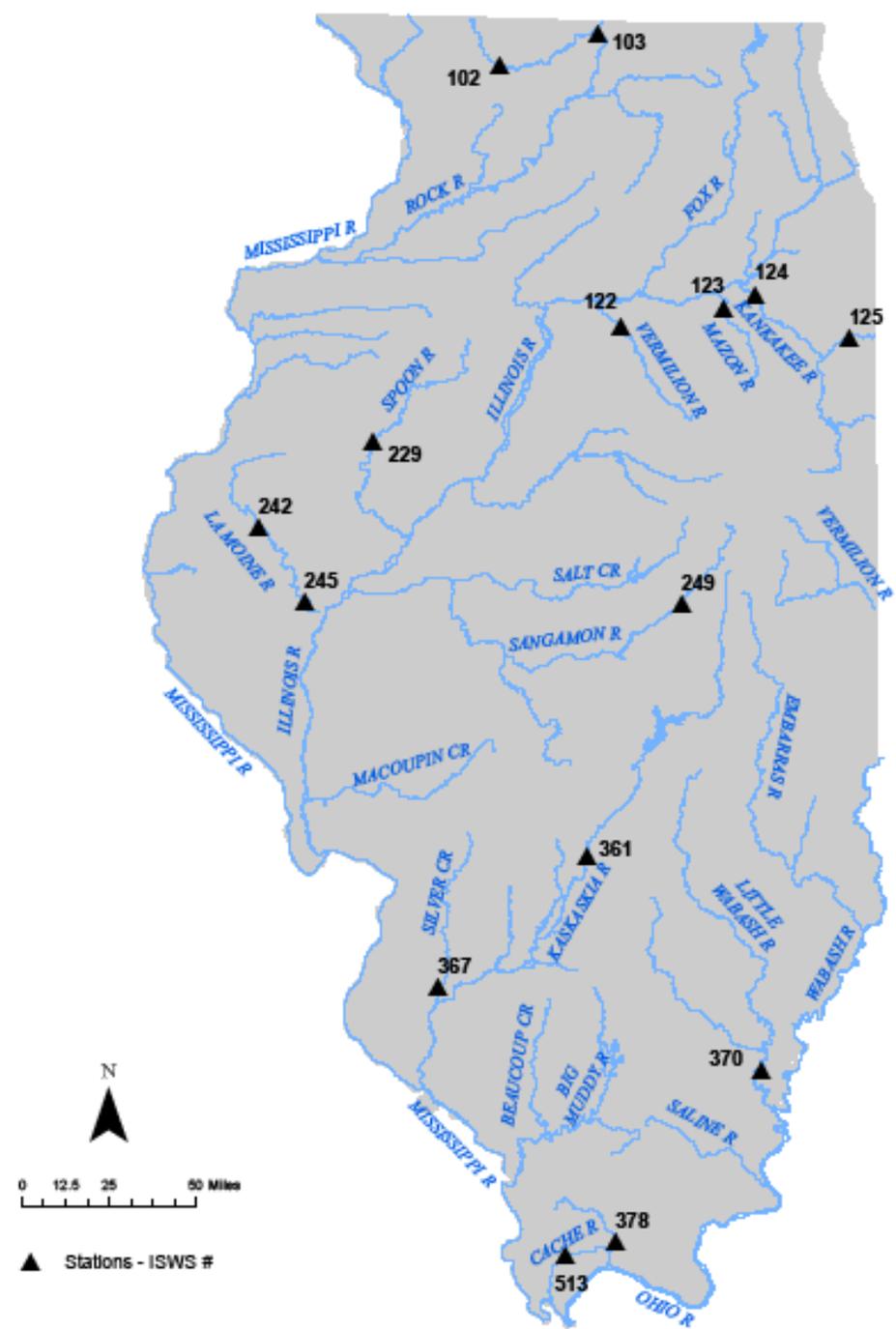
Sediment Budget of the Illinois River 1981-2000

Sediment Budget of the Illinois River



Long Term Sediment Trends in the Illinois River Basin

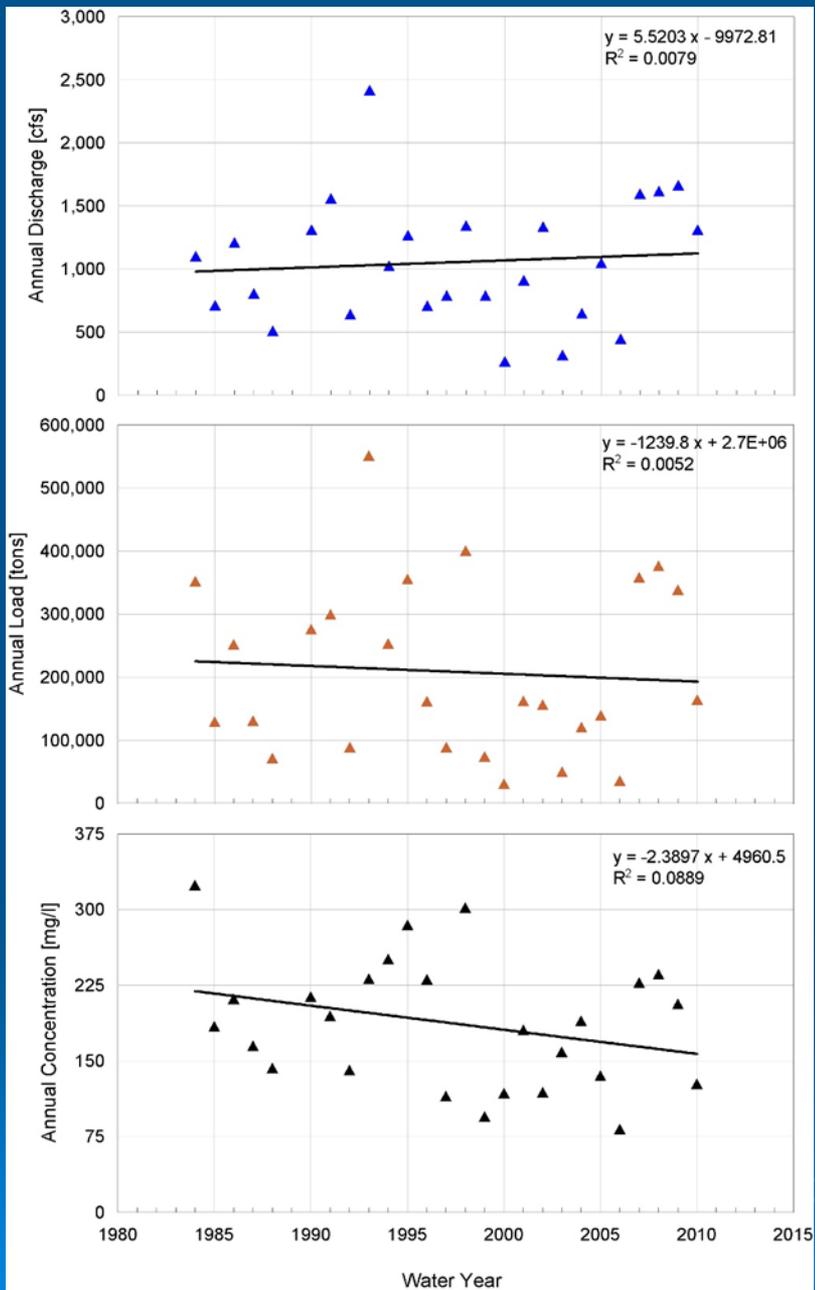
Illinois Benchmark Sediment Network: Current Stations



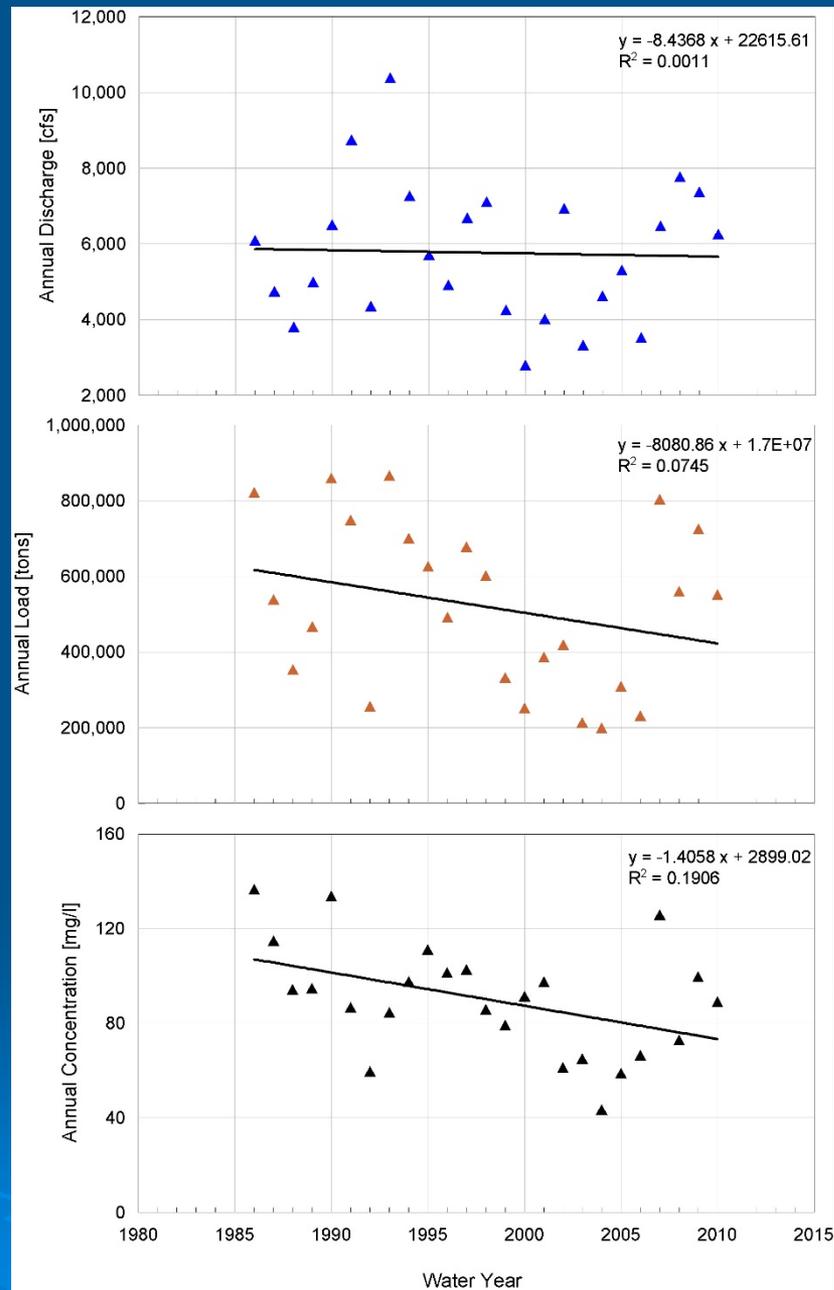
ISWS

Benchmark Sediment Monitoring Program (BSMP)

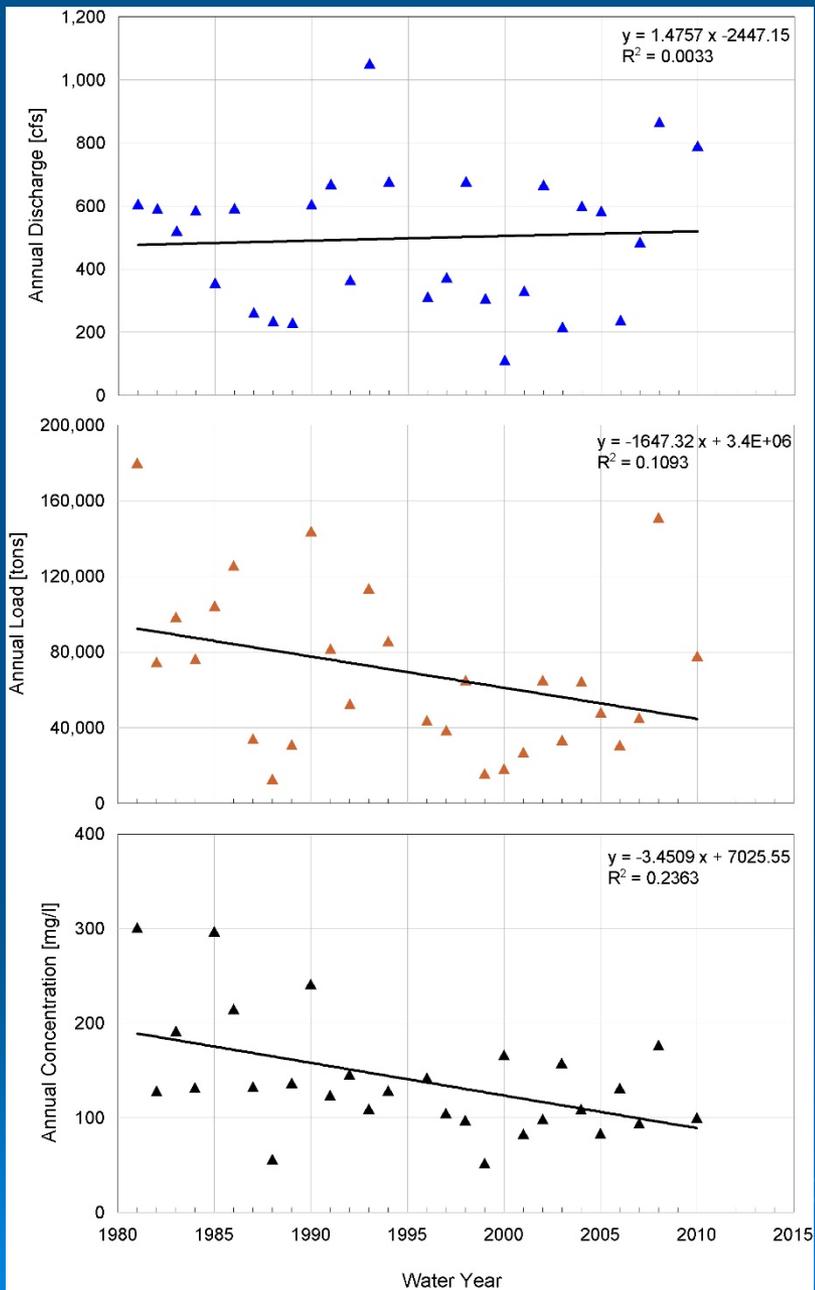
- 1980 - ISWS established the Illinois Benchmark Sediment Monitoring Network (BSMN) consisting of 50 monitoring stations throughout Illinois.
- Currently there are 15 active monitoring stations
 - *Goal: Develop comprehensive, long-term database of suspended sediment transport to provide a means for investigating and quantifying long-term trends that may be occurring in Illinois watersheds.*



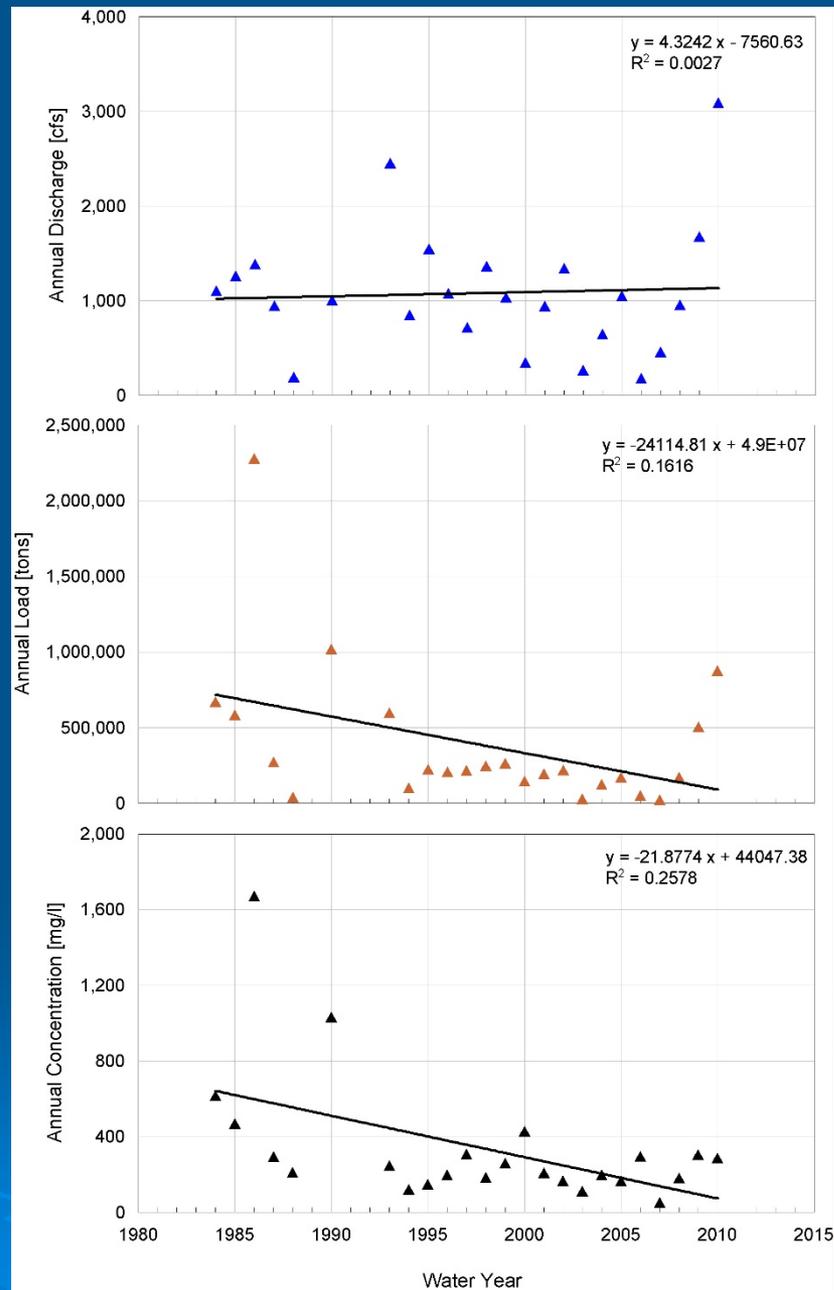
**ISWS# 122: Vermilion River
near Leonore, IL**



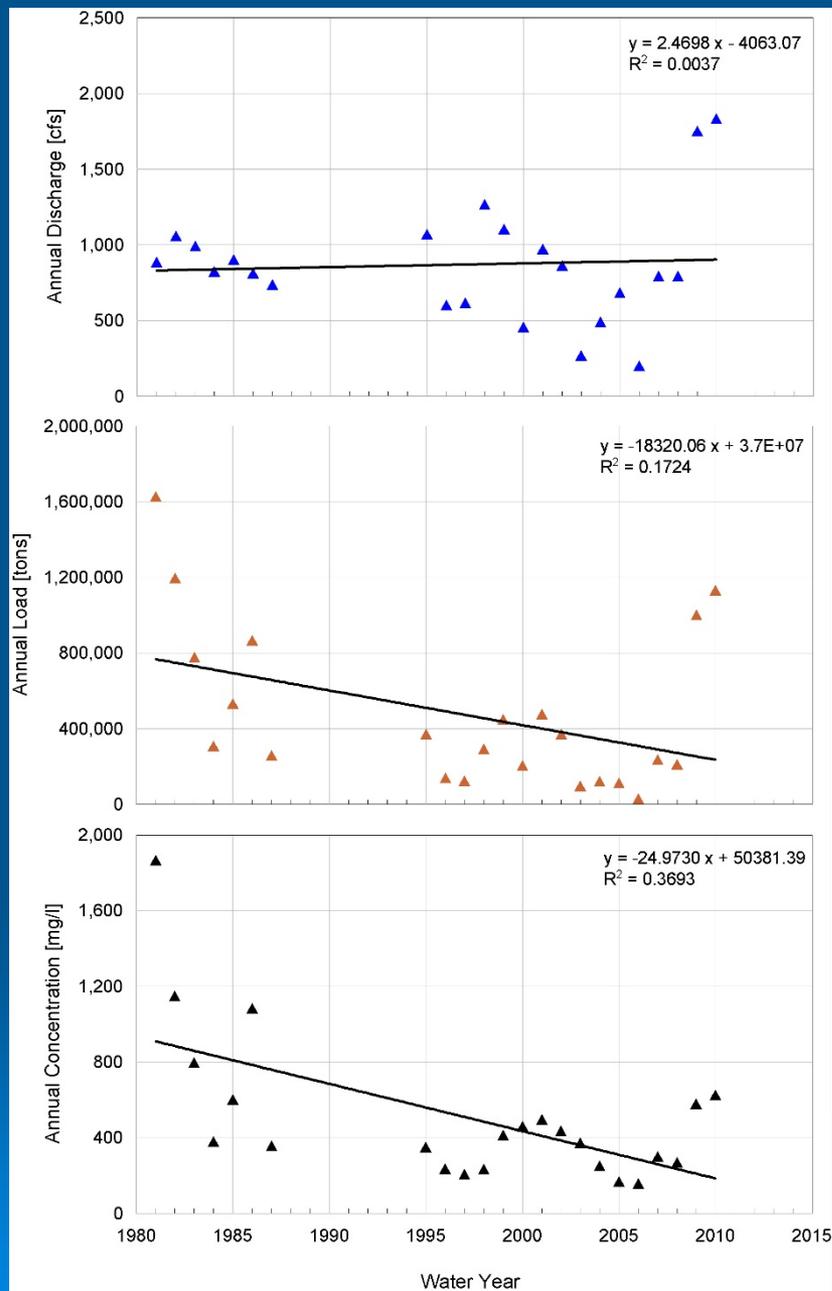
**ISWS #124: Kankakee River
near Wilmington, IL**



**ISWS# 249: Sangam River
at Monticello, IL**

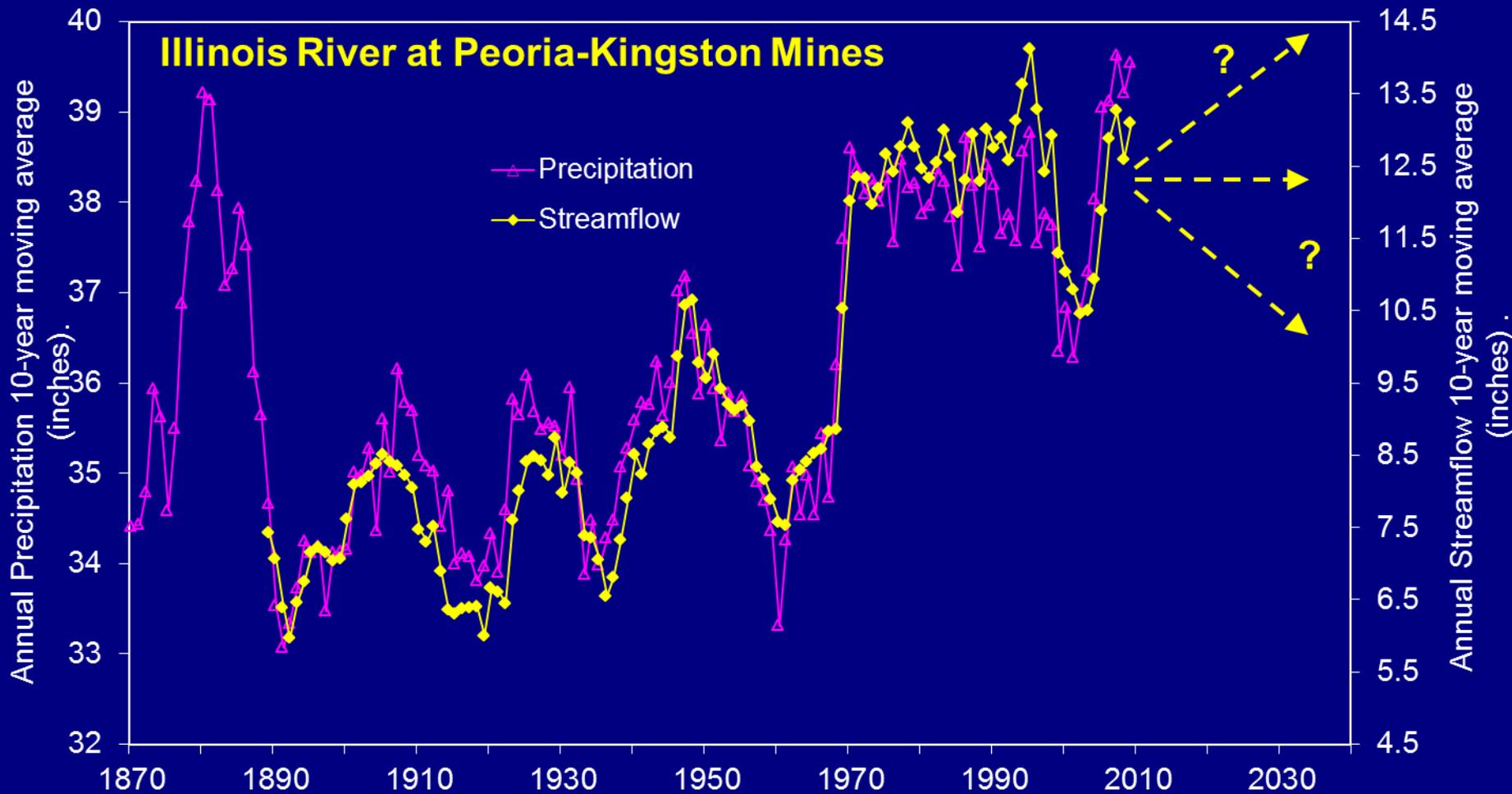


**ISWS #245: La Moine River
at Ripley, IL**

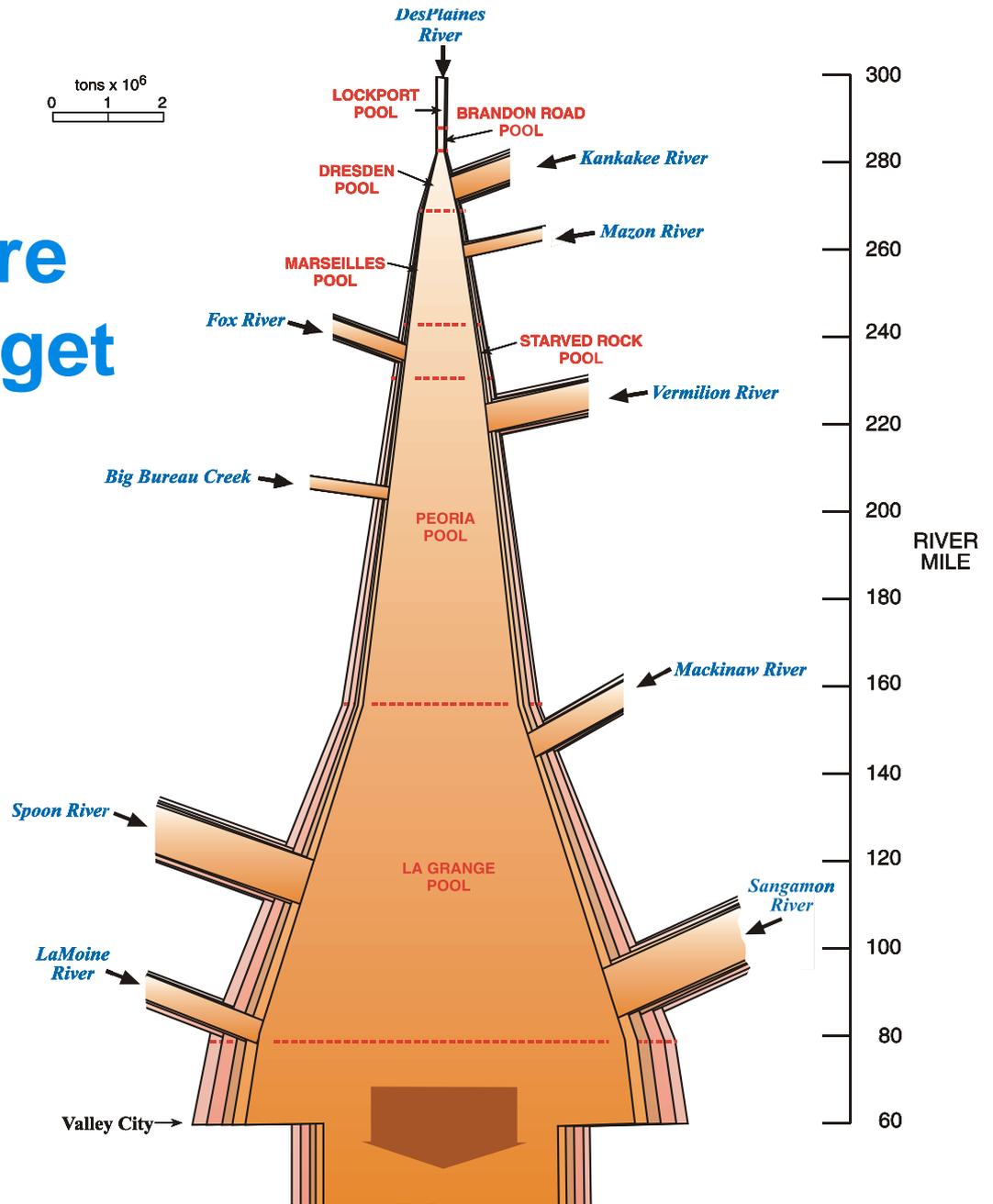


**ISWS #229 Spoon River
at London Mills, IL**

Trends in Streamflow and Precipitation: Illinois River



Potential Future Sediment Budget Scenarios



Thank You!

<http://www.isws.illinois.edu/>

