

# Affordable Water Resource Management

Illinois Lake Management Association - 2014 Conference

## Maintaining Reservoir Storage Capacity

By: Hank Sutton, President  
Lake Rip Rap, Inc.  
Producer of Macoupin Boats

# *Lake Springfield*



# Lake Springfield

I-55 (old US-66) causeway / bridge

60 years ago today, Central Illinois was in the middle of a severe drought

This basin was completely depleted by December, 1954.

Springfield nearly ran out of water !!

# Illinois Lake Management Association 2014 Conference



Then the Drought of '53 - '54

the water level reached a low of  
13 feet below full pool.  
Dec. 29, 1954

Basin shown in  
previous slide  
photo date: January, 1955

Lake Springfield  
full pool

US-66 (I-55)

An aerial photo taken by CWLP employee Chuck Laswell shows Old Sugar and Lick creeks cross the dry bed of drought-ravaged Lake Springfield.

PHOTO COURTESY THE SANGAMON VALLEY COLLECTION AT LINCOLN LIBRARY  
Illinois Times article - Aug. 16, 2012 - contact: Tara Mc Andrew



Since the drought, the population of Springfield has grown by 42% or 35,000 additional people according to the US Census Bureau.

## Then What?

Not if, but when a drought equal to the one of '53-'54 occurs again, it is likely that:

first, water use restrictions will be established

then, the City's power plant will be shut down

then, more severe water use restrictions will be implemented

many business will be forced to close

— jobs will be lost

many families will cross over into poverty

without extraordinary intervention, the City is likely to run out of water

This is serious.

In 1954, I saw the bottom of Lake Springfield  
from the US 66 Bridge.

Hank Sutton

# This is serious.

In 1954, I saw the bottom of Lake Springfield  
from the US 66 Bridge.

Hank Sutton

We may not dodge the bullet next time.



Our reservoirs are loosing storage capacity to erosion & sediment loading.



Lake Rip Rap, Inc.

The City of Decatur is now considering a major dredging project (bid price \$90 million).



PLEASE CONSERVE WATER  
UNTIL FURTHER NOTICE

Since its construction, Lake Decatur has lost over 30% of its capacity to siltation.

# Maintaining Reservoir Storage Capacity

Erosion Control in the Watershed

Shoreline Erosion Control

Dredging

# Primary Sources of Reservoir Sediment.



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## Soil erosion in the watershed:

In Illinois, one of the largest contributors of reservoir sediment is soil erosion on agricultural lands.

Generally, farmers are very concerned about soil erosion and have made great strides in stewardship of their crop lands.

Lake managers should be aware of agricultural BMP's that are appropriate for the local topography and USDA aid programs for controlling soil erosion. Consult with your local USDA Farm Service Center.

BMP's that are designed to catch sediment (buffer strips, grass waterways, silt basins, dry ponds, etc.) will need to be maintained on a regular basis.

# Sunset Lake Watershed Erosion Control Practices

Farming with reduced tillage



Native prairie



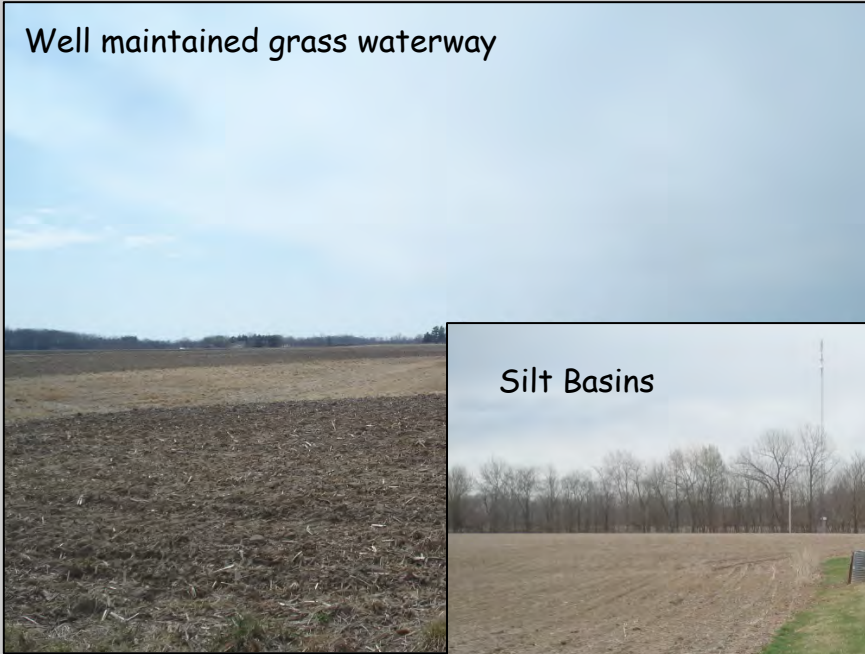
Undisturbed tributary wetland



200' wide grass buffer



Well maintained grass waterway



Natural woodland buffer



Silt Basins



ROADSIDE  
FOR  
WILDLIFE  
DO NOT MOW  
BEFORE AUGUST 1st  
ILLINOIS DEPARTMENT OF CONSERVATION

IDNR "Roadsides for Wildlife" Program



Tillable acreage set-aside  
USDA Conservation Reserve Program





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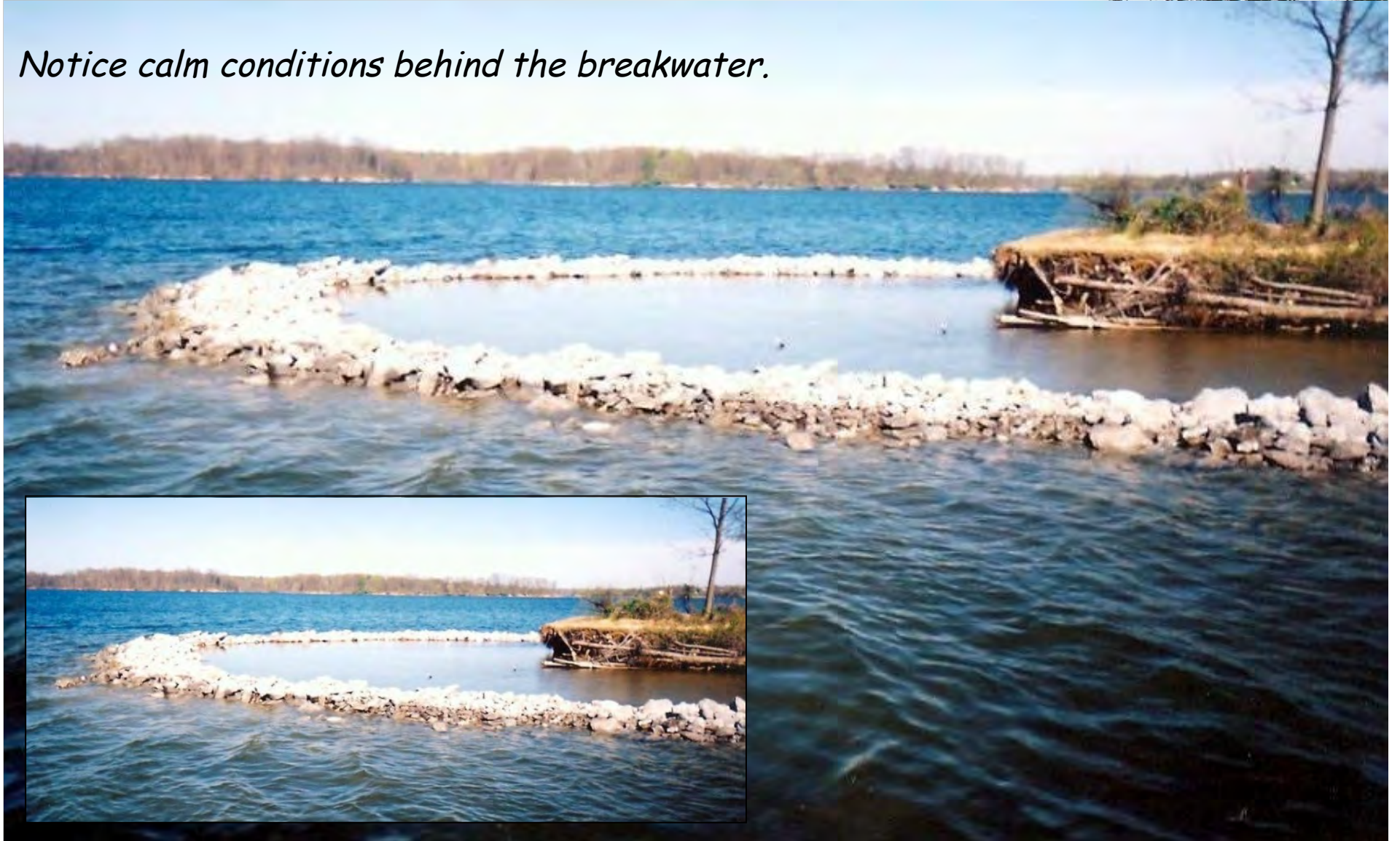
Lake Rip Rap, Inc.



*Macoupin Riprap Boats*  
[www.MacoupinBoats.com](http://www.MacoupinBoats.com)

# Lake Rip Rap, Inc.

*Notice calm conditions behind the breakwater.*



Lake Rip Rap, Inc.



2013



2006

Lake Rip Rap, Inc.



Lake Rip Rap, Inc.

Natural Plant Colonization  
after 4 years





*The Macoupin 420*

Redesigned for 2014



(prototype shown)

*The Macoupin 410*



The redesigned Macoupin 420 compared to the Macoupin 410

The redesigned Macoupin 420:

## The Macoupin 420

Redesigned for 2014



## The Macoupin 410



The redesigned Macoupin 420 compared to the Macoupin 410

### The redesigned Macoupin 420:

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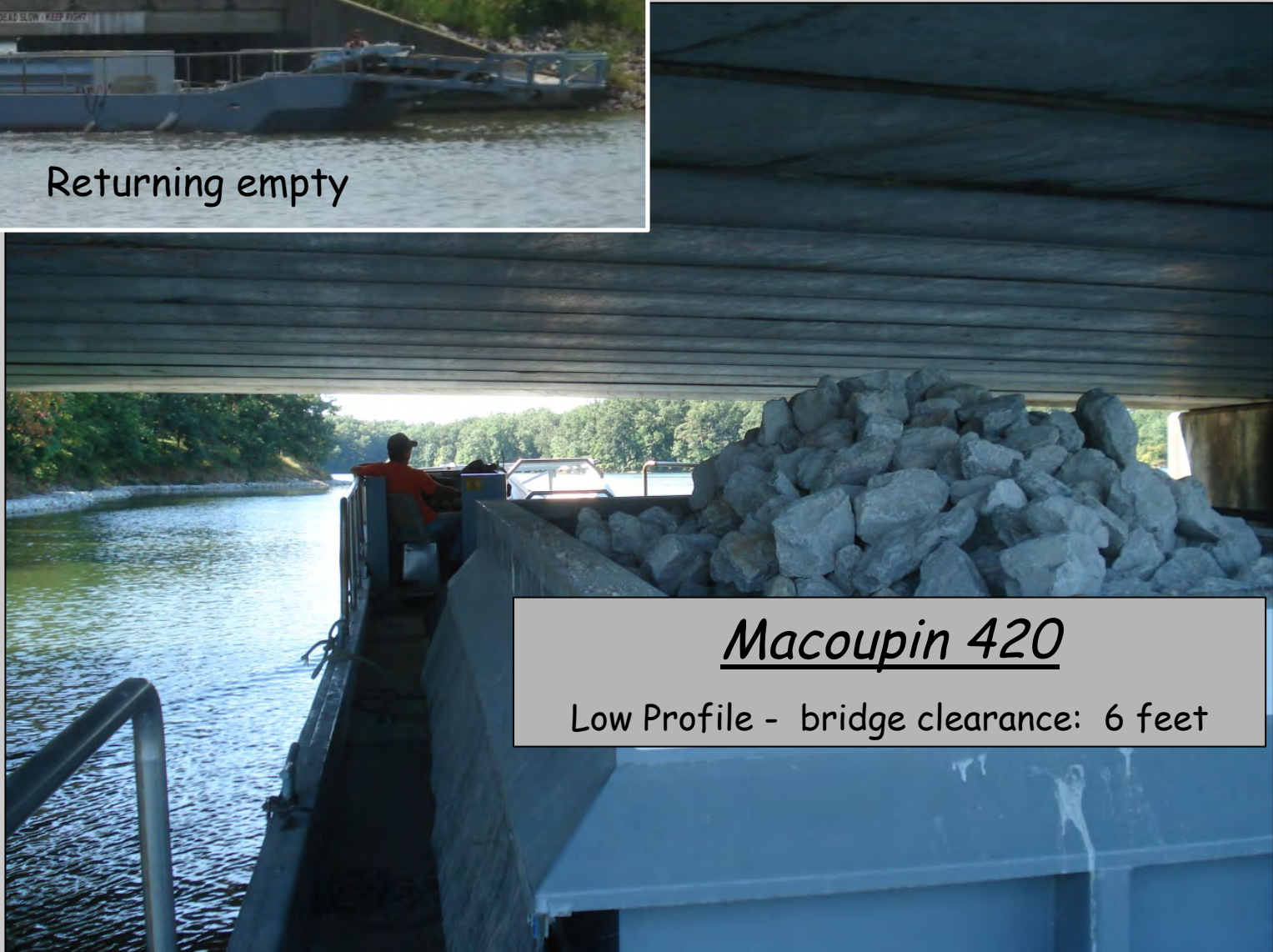
and has a much lower bridge clearance



# Lake Rip Rap, Inc.



Returning empty



## Macoupin 420

Low Profile - bridge clearance: 6 feet



no equipment on the bank, no excavation,  
no seeding or planting - \$65 per foot

## Shoreline Erosion Control

Affordability through Innovation



Lean Design

Natural plant colonization

no equipment on the bank, no excavation,  
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Bio-engineered shoreline  
with riprap toe

reshaped bank with seeding and planting  
\$250 per foot

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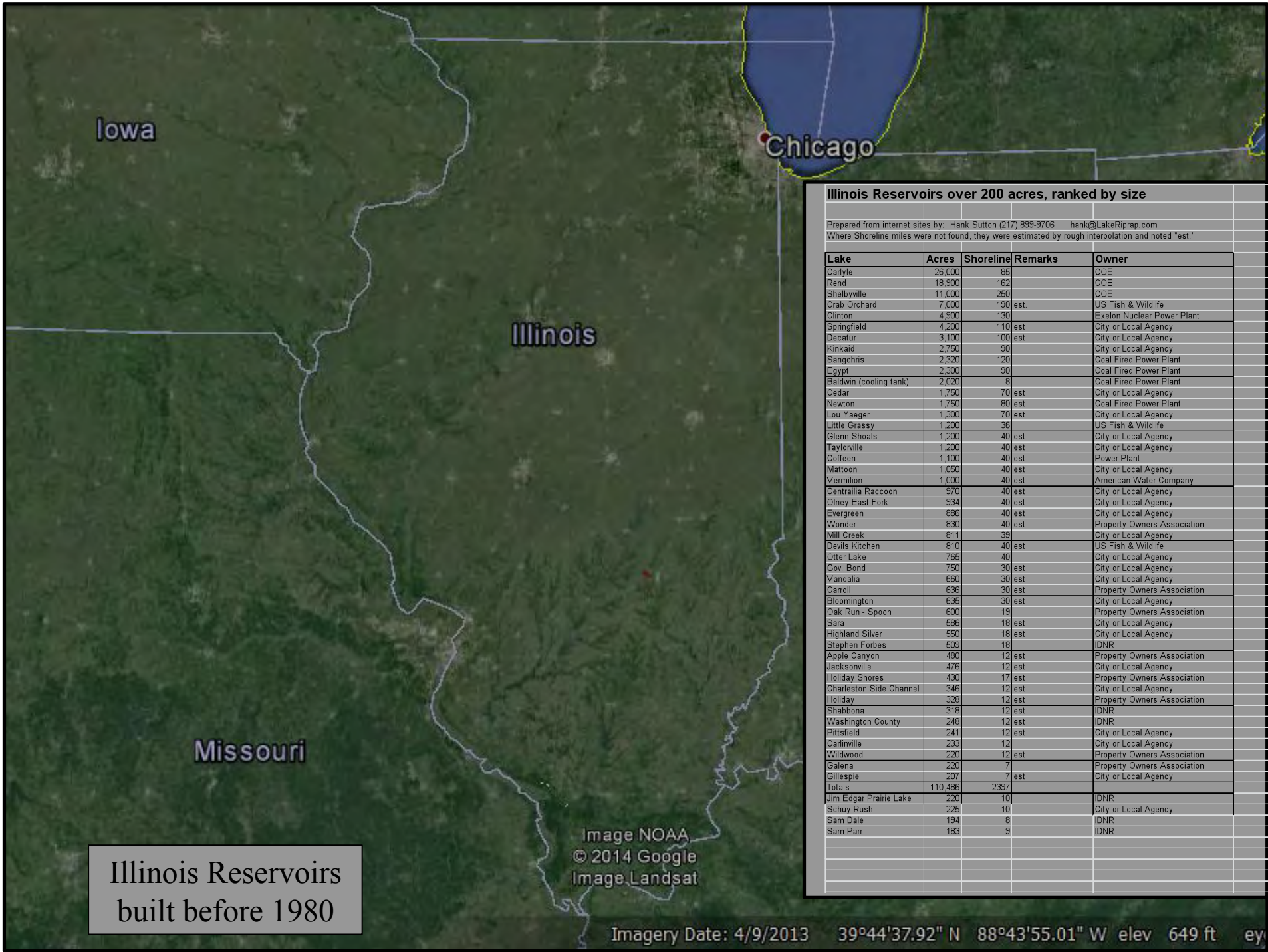
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improved riprap boat design

## Shoreline Erosion Control Affordability through Innovation



Illinois Reservoirs  
built before 1980

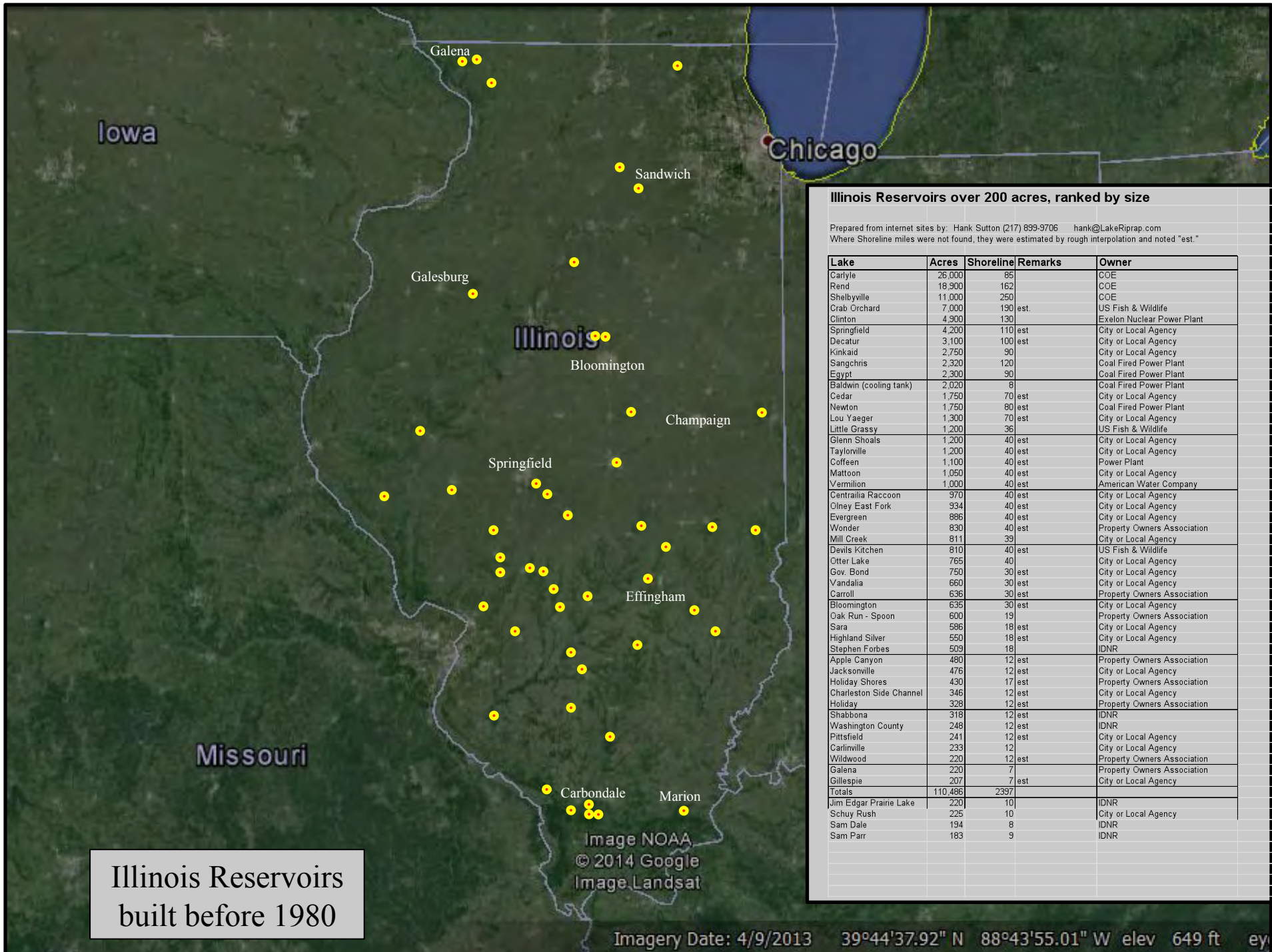
**Illinois Reservoirs over 200 acres, ranked by size**

Prepared from internet sites by: Hank Sutton (217) 899-9706 hank@LakeRiprap.com  
Where Shoreline miles were not found, they were estimated by rough interpolation and noted "est."

Lake	Acres	Shoreline	Remarks	Owner
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Rend	18,900	162		COE
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Image NOAA  
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Image Landsat

Imagery Date: 4/9/2013 39°44'37.92" N 88°43'55.01" W elev 649 ft ey



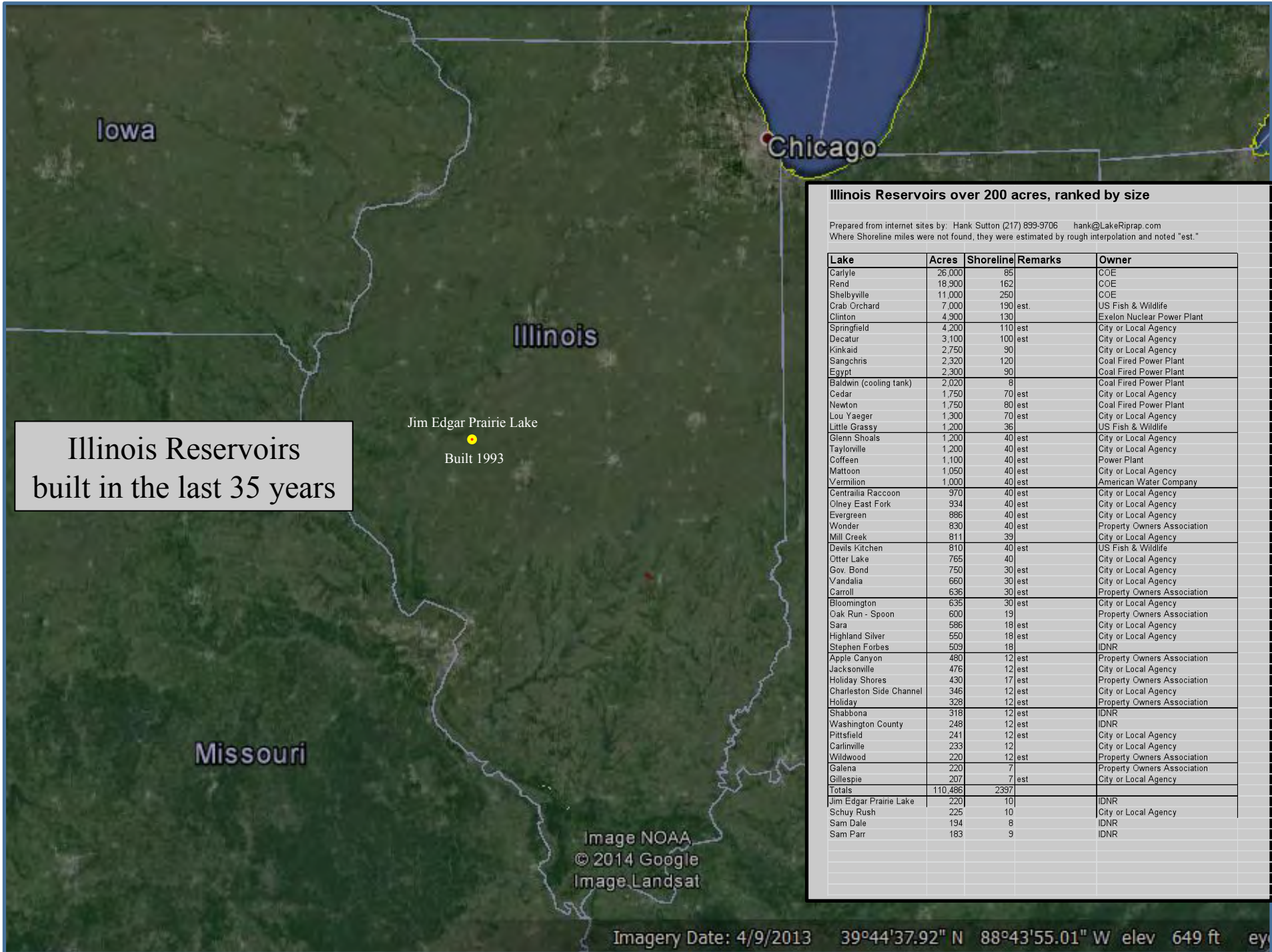
Illinois Reservoirs  
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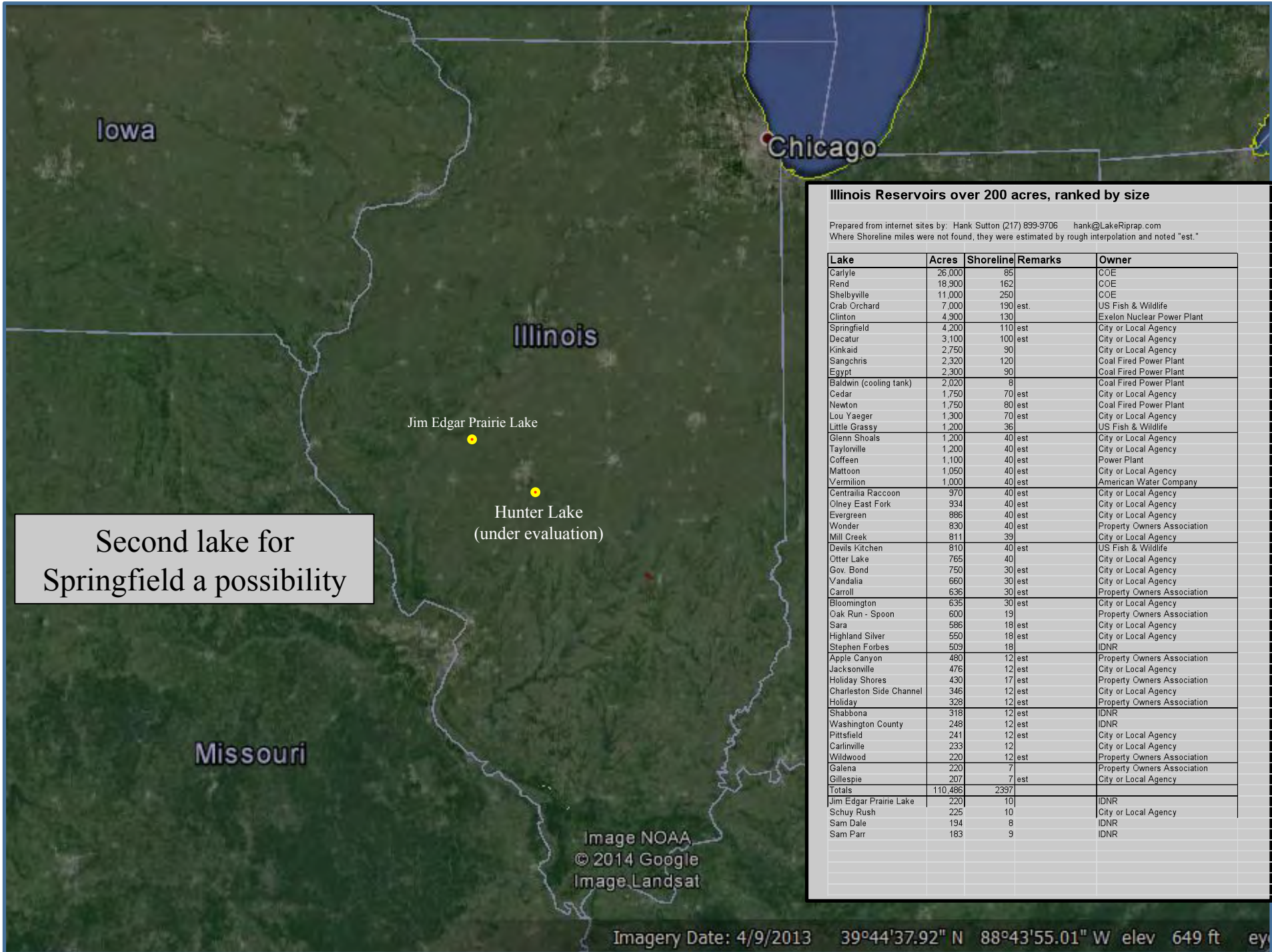


**Illinois Reservoirs  
built in the last 35 years**

Jim Edgar Prairie Lake  
●  
 Built 1993

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Image NOAA  
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 Image Landsat



Second lake for Springfield a possibility

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**The next session this morning will give details of planning and implementing a dredging project.**

Society depends on a reliable public water supply...



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Thank you for your work in maintaining our water storage capacity.



# Questions?



Lake Rip Rap, Inc.

*Macoupin Mechanical Boats*

Contact: Hank Sutton (217) 899-9706 - [hank@LakeRiprap.com](mailto:hank@LakeRiprap.com)  
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