



Implementing a Project with 319 Funds:

The Spring Brook Meander Project

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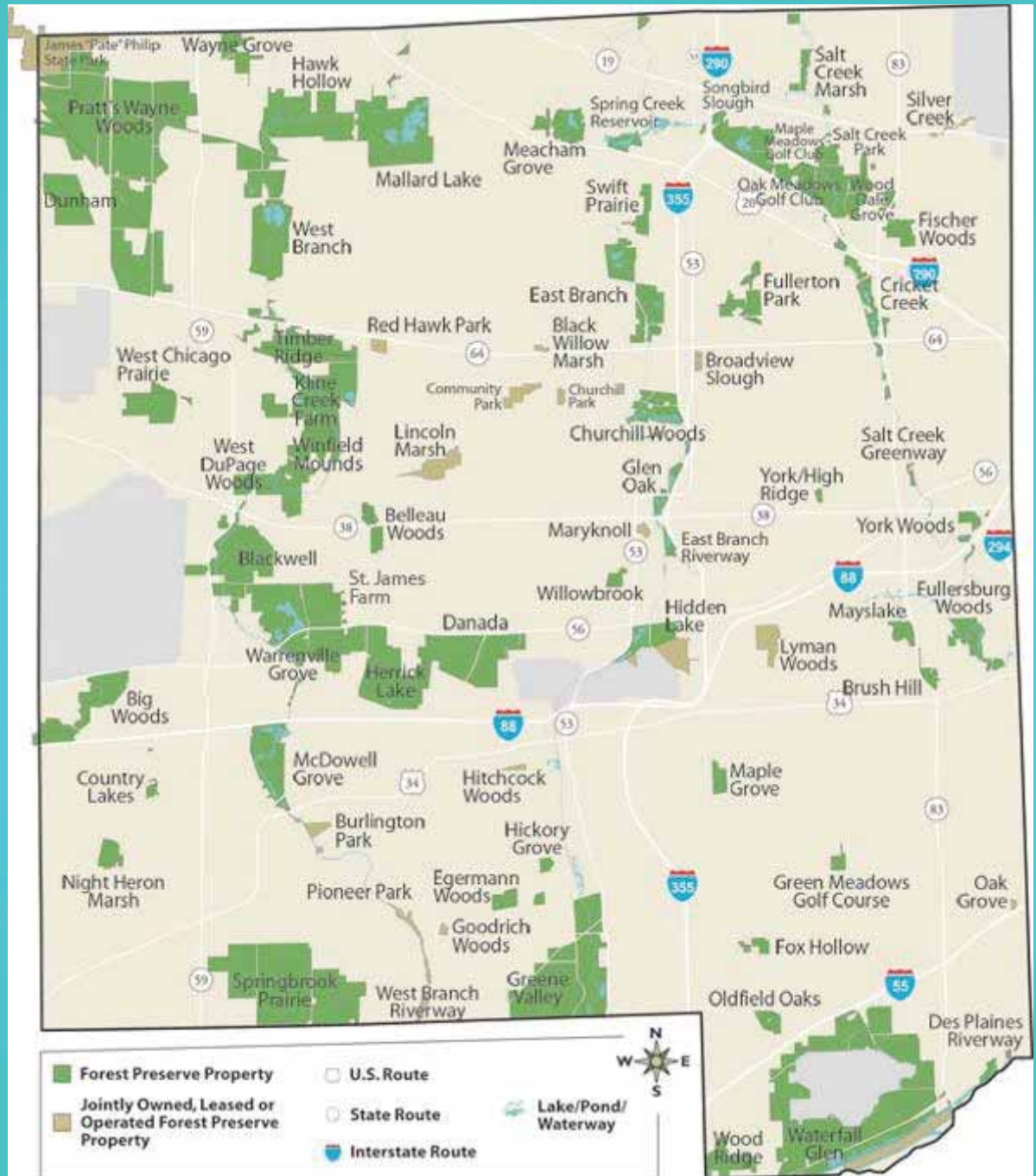
"...to acquire... and hold lands... for the purpose of protecting and preserving the flora, fauna and scenic beauties... for the purpose of the education, pleasure and recreation of the public."

-- Downstate Forest Preserve District Act of 1915

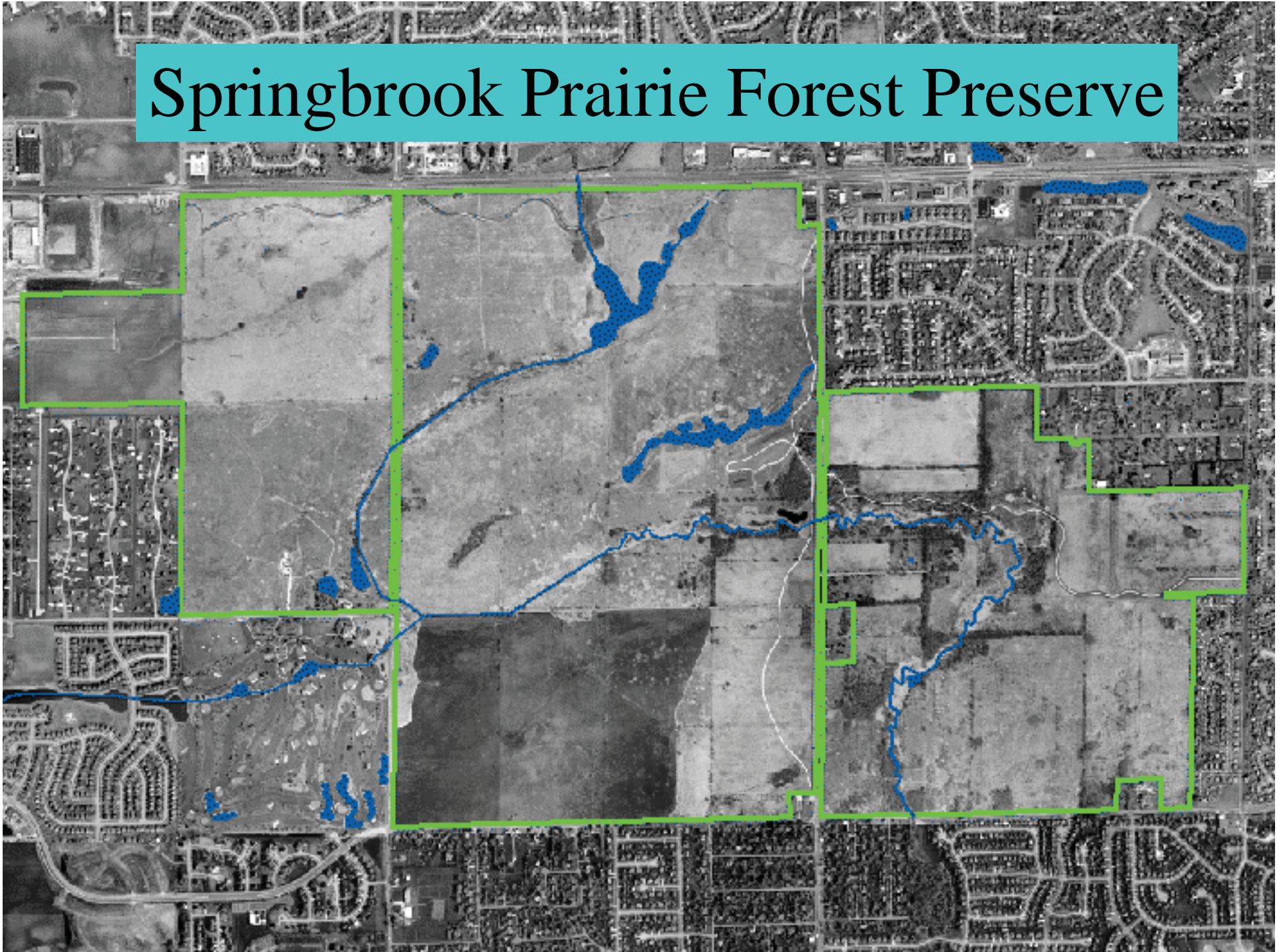




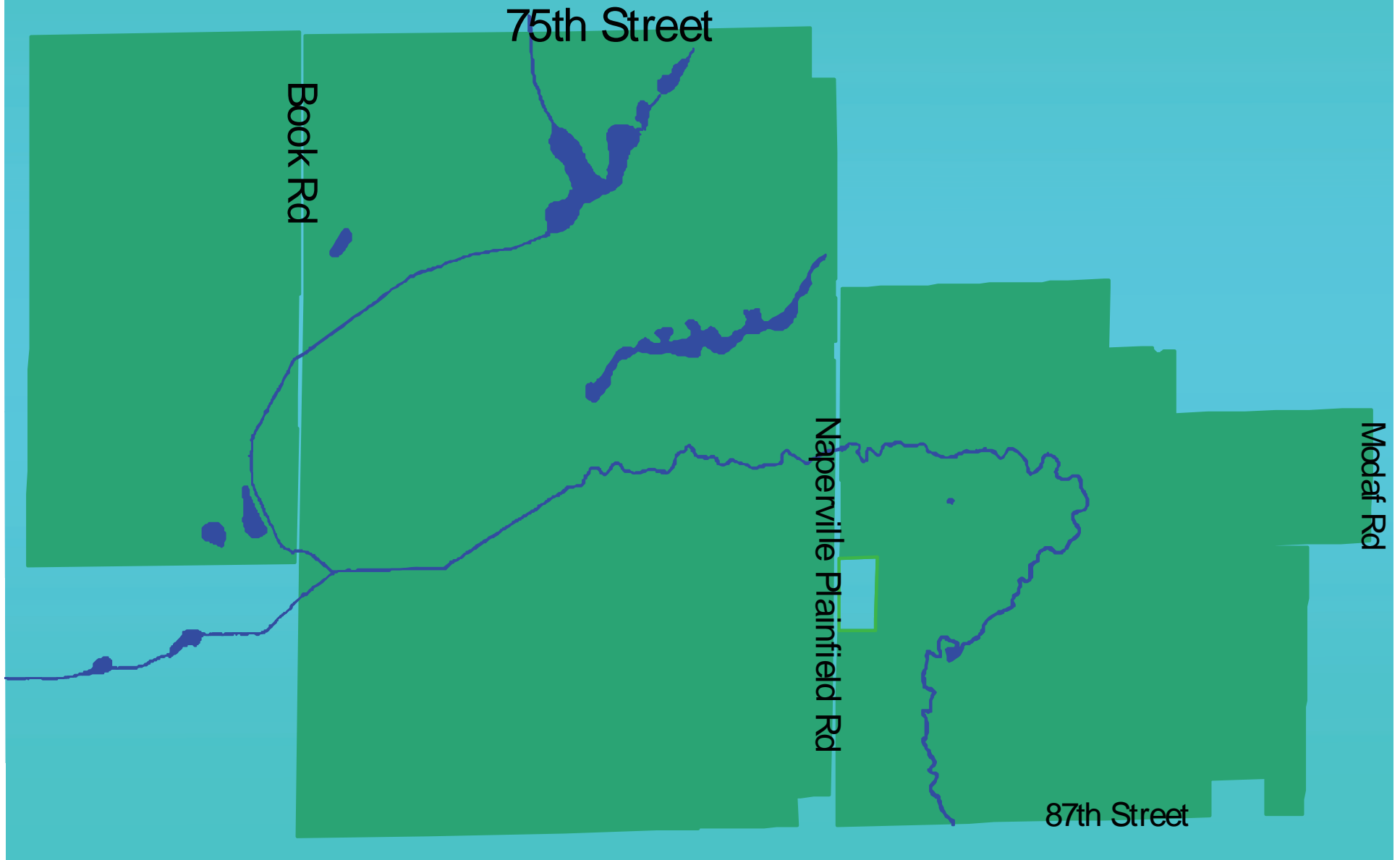
- 25,000 acres
- 60 Preserves
- 12% of County



Springbrook Prairie Forest Preserve

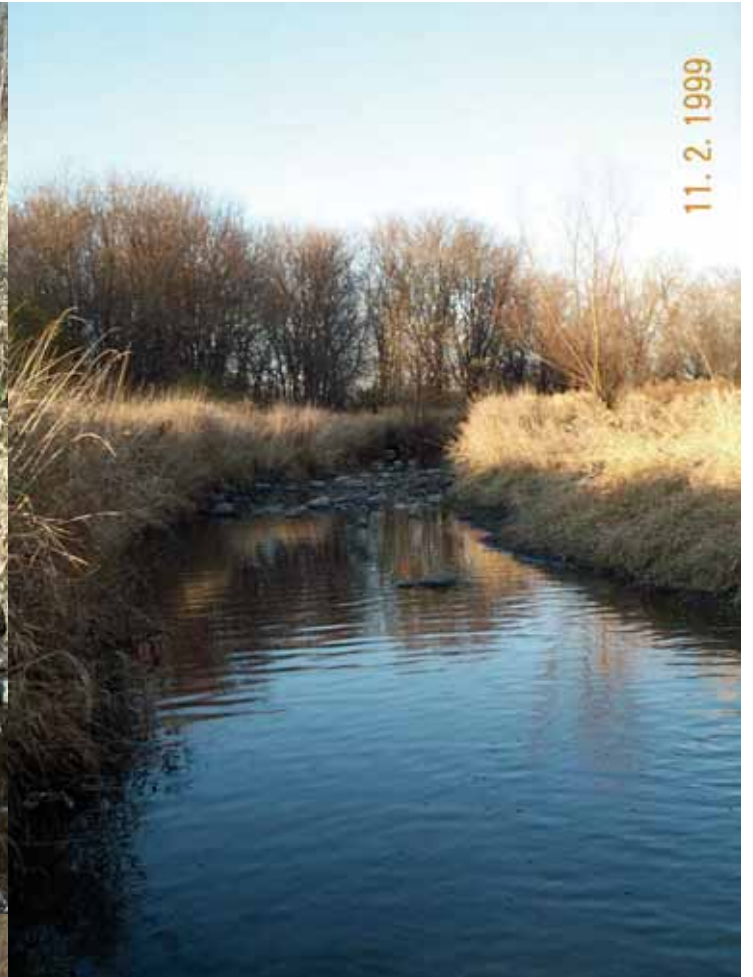


Springbrook Prairie Forest Preserve











11. 2. 1999



The Spring Brook Stream Meander Project

- Develop an accurate picture of stream stability/instability.
- Measure stream instability.
- Characterize lotic habitat.
- Develop a conceptual plan for restoration.

Spring Brook Watershed

- 9.9 sq. miles
- 25.6 sq. km
- 1/3 preserve



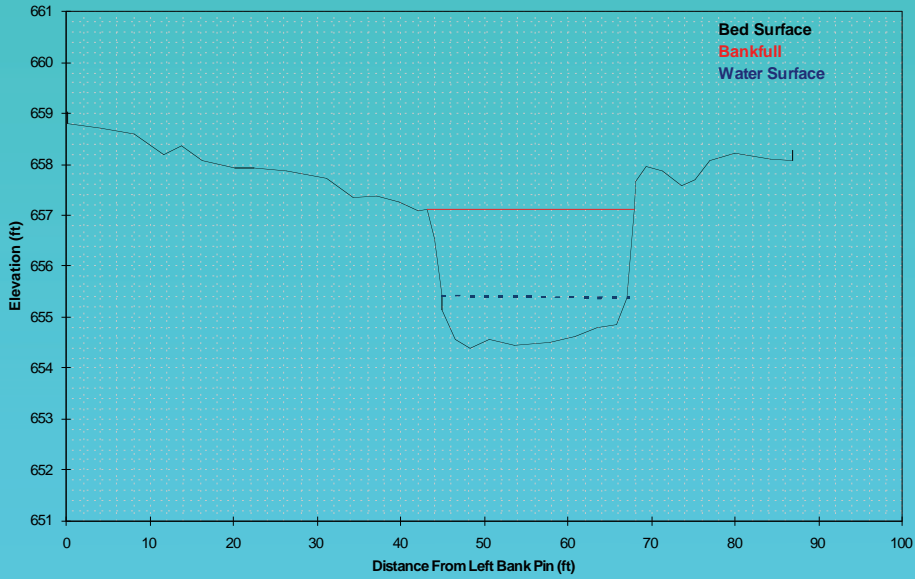
The Spring Brook Stream Meander Project

- Cross-Section Studies
- Substrate Studies – Pebble Counts
- Measure Bank Erosion – Bank Pins
- Measure Stream Scouring – Scour Chains
- Longitudinal Profile Studies
- Hydrological Data – USGS Gage Station
- Benthic Invertebrate Studies
- Mussel Surveys

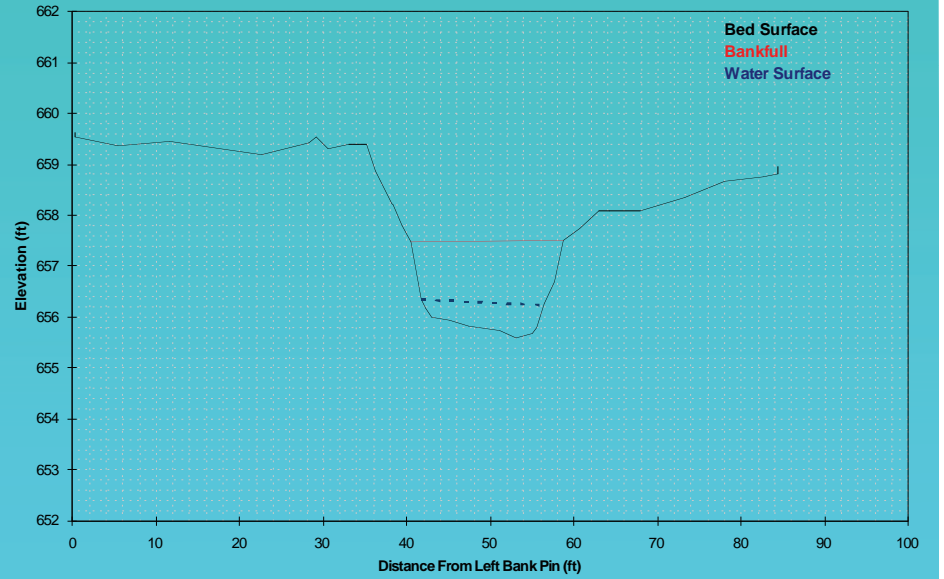
Cross-Section Studies



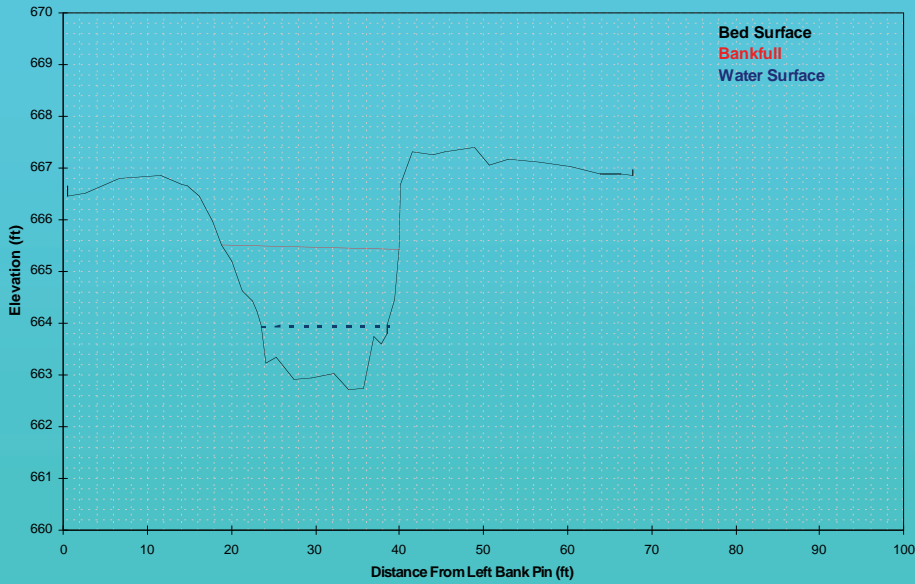
Springbrook Creek: Cross Section - O



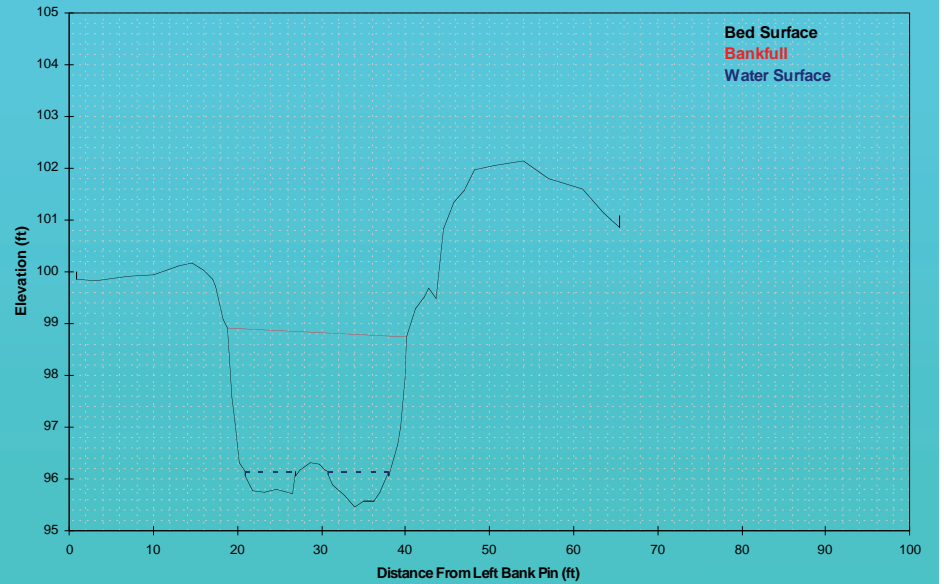
Springbrook Creek: Cross Section - R



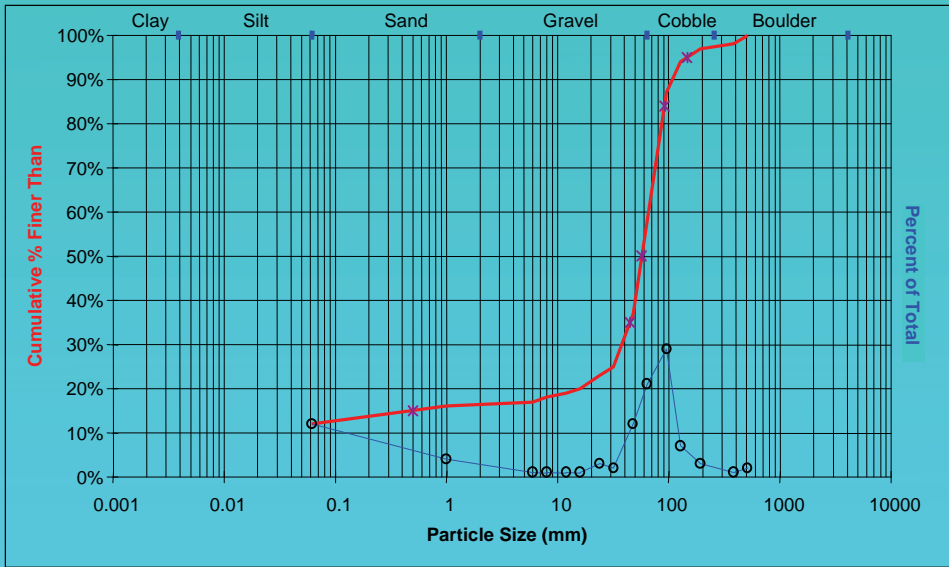
Springbrook Creek: Cross Section - NN



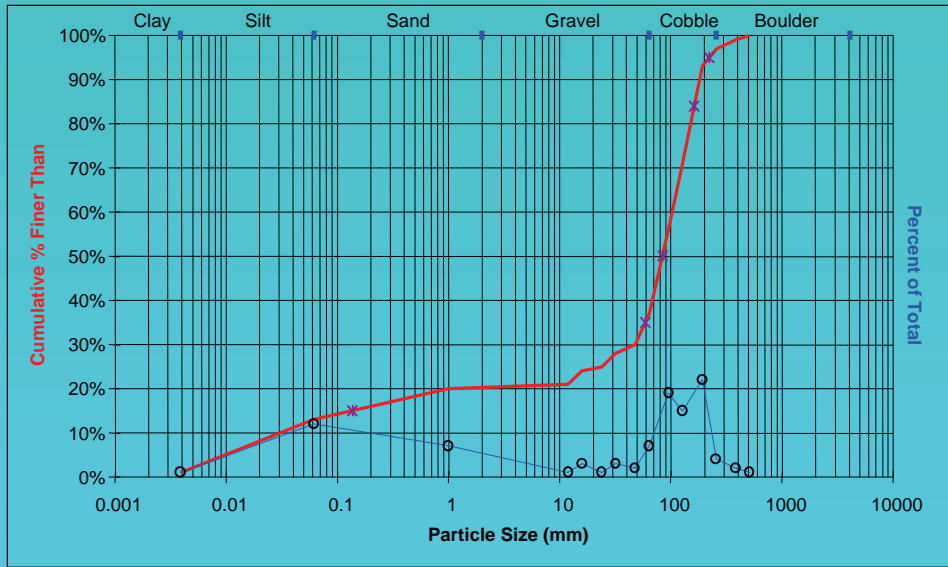
Springbrook Creek: Cross Section - TT



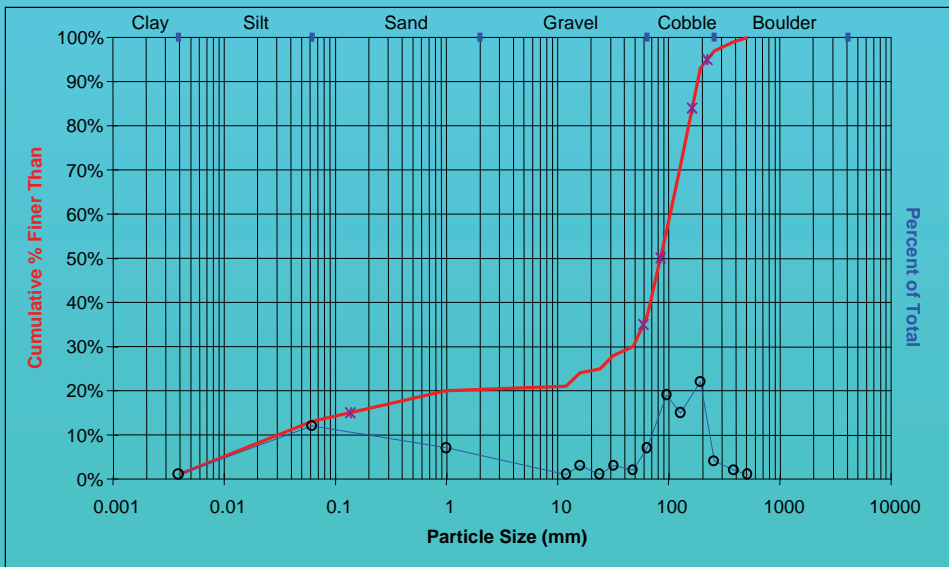
Springbrook Creek: Cross Section - O



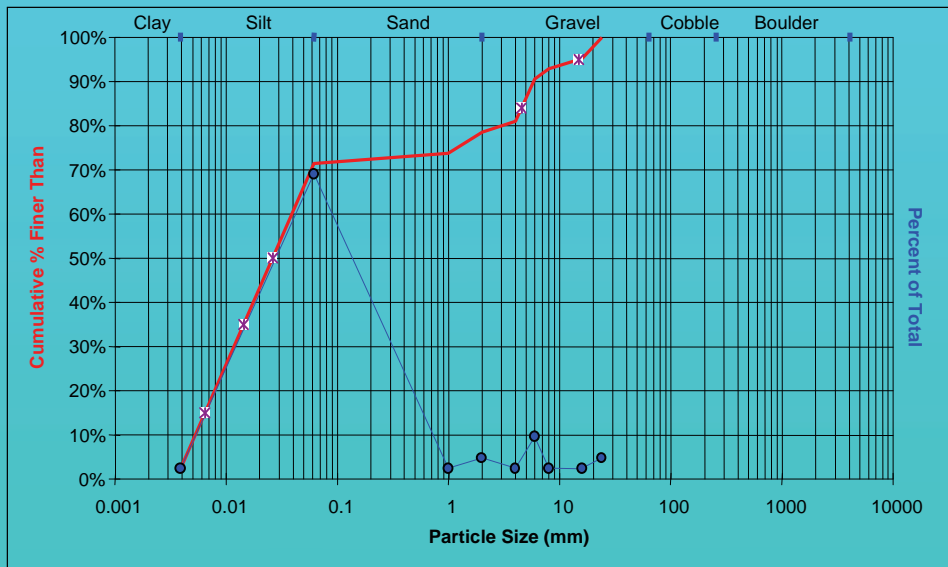
Springbrook Creek: Cross Section - R



Springbrook Creek: Cross Section - NN



Springbrook Creek: Cross Section - TT



Bank Erosion – Bank Pins



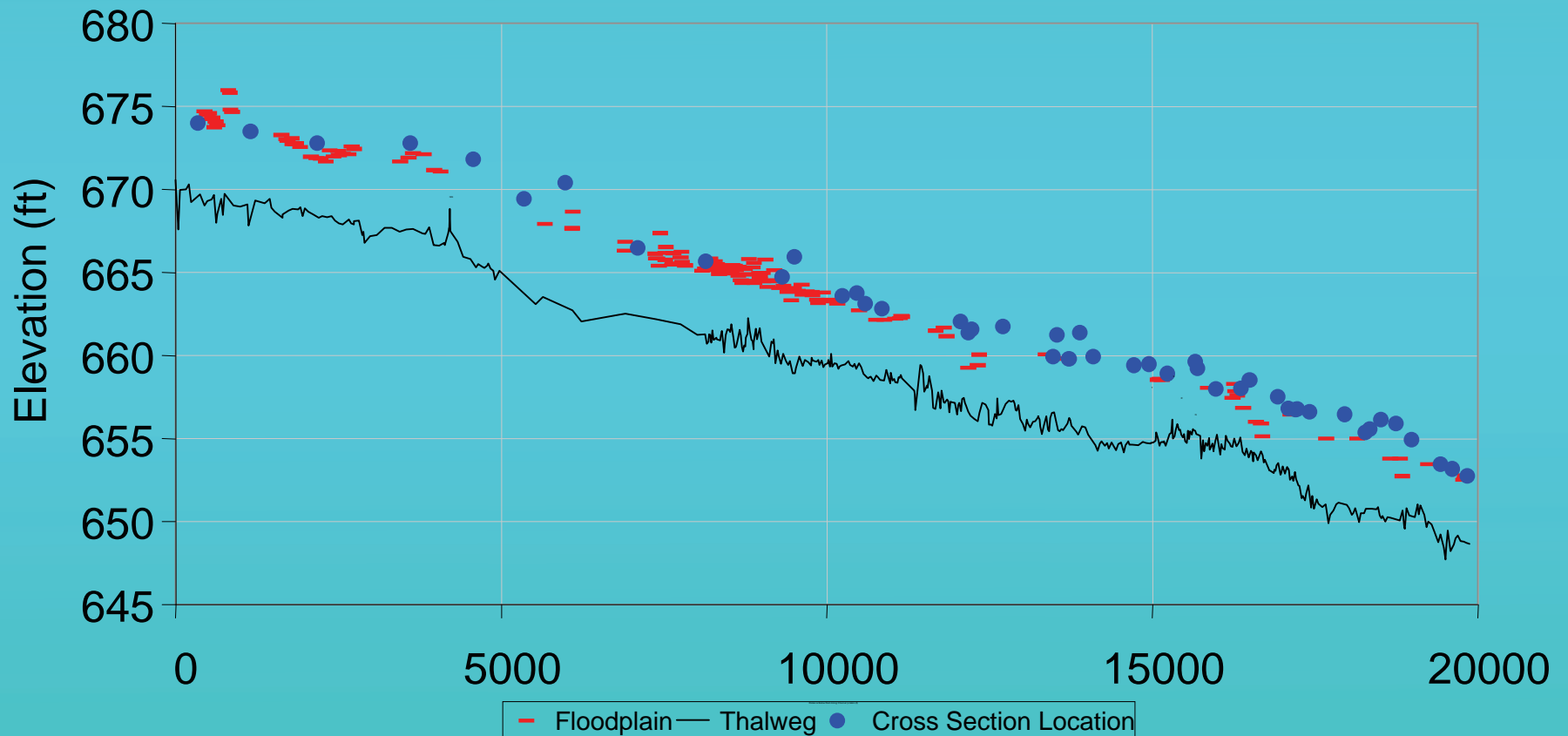
Bank Pins

11/2000 thru 7/2004
(Feet)

X-Section	Top Pin	Bottom Pin
XS-E	1.63	1.69
XS-N	0.05	0.55
XS-O	0.18	0.42
XS-R	0.09	0.49
XS-Z	1.54	1.56
XS-CC	0.18	0.41
XS-GG	0.96	1.47
XS-II	0.35	1.17
XS-JJ	0.89	1.10
XS-KK	0.57	1.75
XS-NN	1.46	1.95

Spring Brook

Longitudinal Profile



Hydrological Data

USGS Gage Station

1988 - 2001

Duration of Flows at Gage Station	
Average No. Days per Year	Mean Daily Flow (cfs)
0.25	300
5	200
1	135
2	105
5	65
10	55
15	40
30	30
Peak Discharge	
Recurrence Interval (years)	Instantaneous Peak Discharge (cfs)
1.5	135

Estimated Bankfull

Working Together

Flow volumes and storm events

Channel width and depth

Channel slope

Channel Sinuosity

Substrate size

Transporting Sediment

The Spring Brook Stream Meander Project

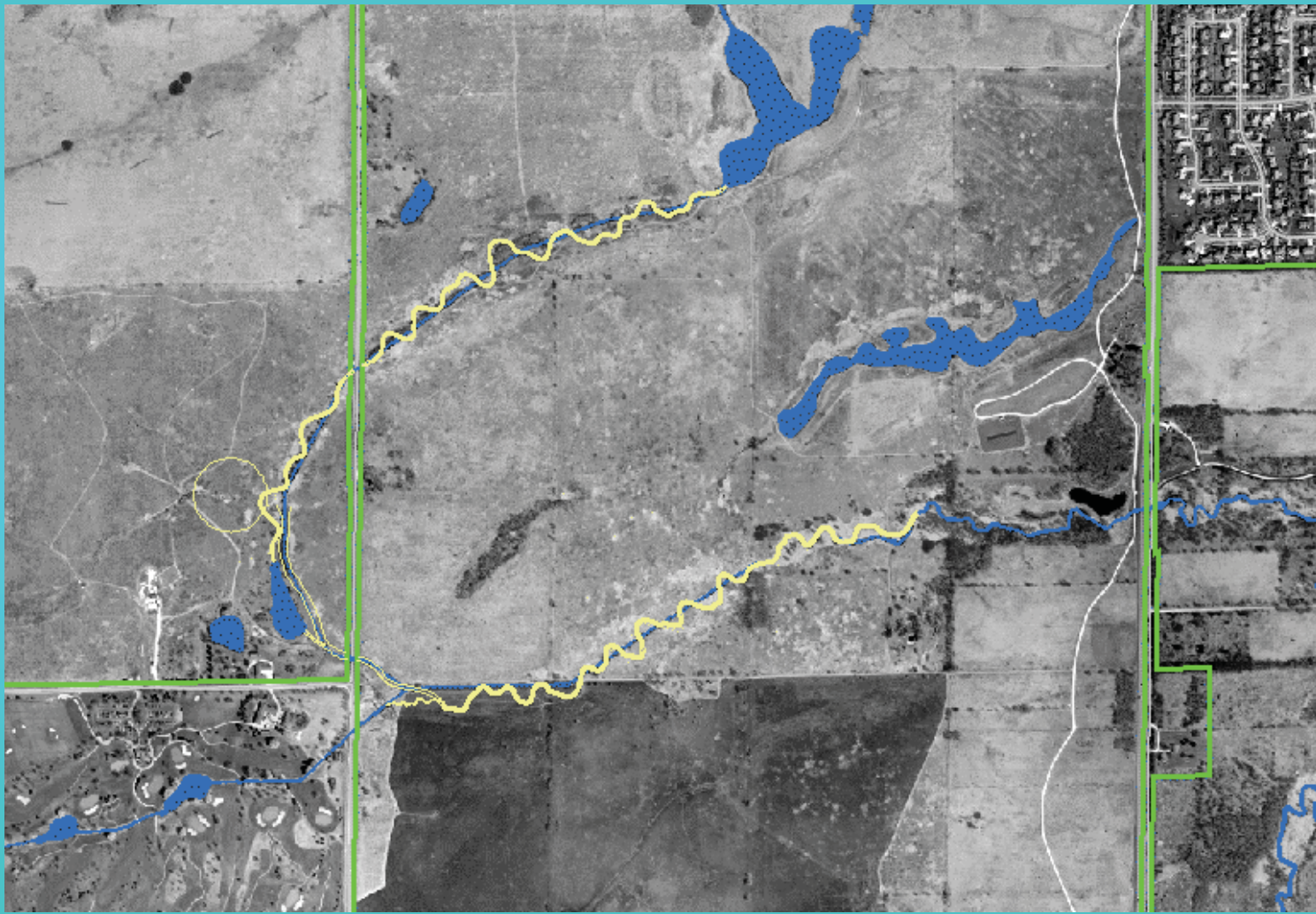
- Create normal entrenchment condition.
- Create geomorphologically appropriate meanders.
- Plan, profile geometry and bed substrate to prevent channel incisement.
- Channel and floodplain geometry mimic natural features and move flood flows.
- Natural material bank revetment and bed substrates to improve lotic diversity.
- Establish native riparian species with continuity to preserve restoration plans.



Bankfull Channel Design Parameters by Reach.

	Upper	Middle	Lower
Discharge (cfs)	50	50	70
Width (ft)	18 – 22	18 - 22	22 - 25
Cross Sectional Area (ft ²)	30 – 40	30 - 40	40 - 50
Mean Depth (ft)	1.6 - 1.8	1.6 - 1.8	1.8 - 2.0
Max Depth (ft)	1.75 - 2.25	1.75 - 2.25	2.0 - 2.5
Pool Depth (ft)	3.0 - 5.0	3.0 - 5.0	4.0 - 6.0
Width/Depth Ratio (ft/ft)	11.8	11.8	12.4
Belt Width (ft)	110 - 130	110 - 130	110 - 130
Meander Wavelength (ft)	200 - 280	200 - 280	240 - 320
Sinuosity (ft/ft)	1.37	1.22	1.38
Slope (ft/ft)	0.0008	0.0012	0.0008

The Spring Brook Stream Meander Project



Permits

- Corp of Engineers (404)
- National Pollution Discharge Elimination System (NPDES)
- 401 Certificate
- IDNR Water Resources Dam Safety
- DuPage County Stormwater
- IDNR Incidental Take





















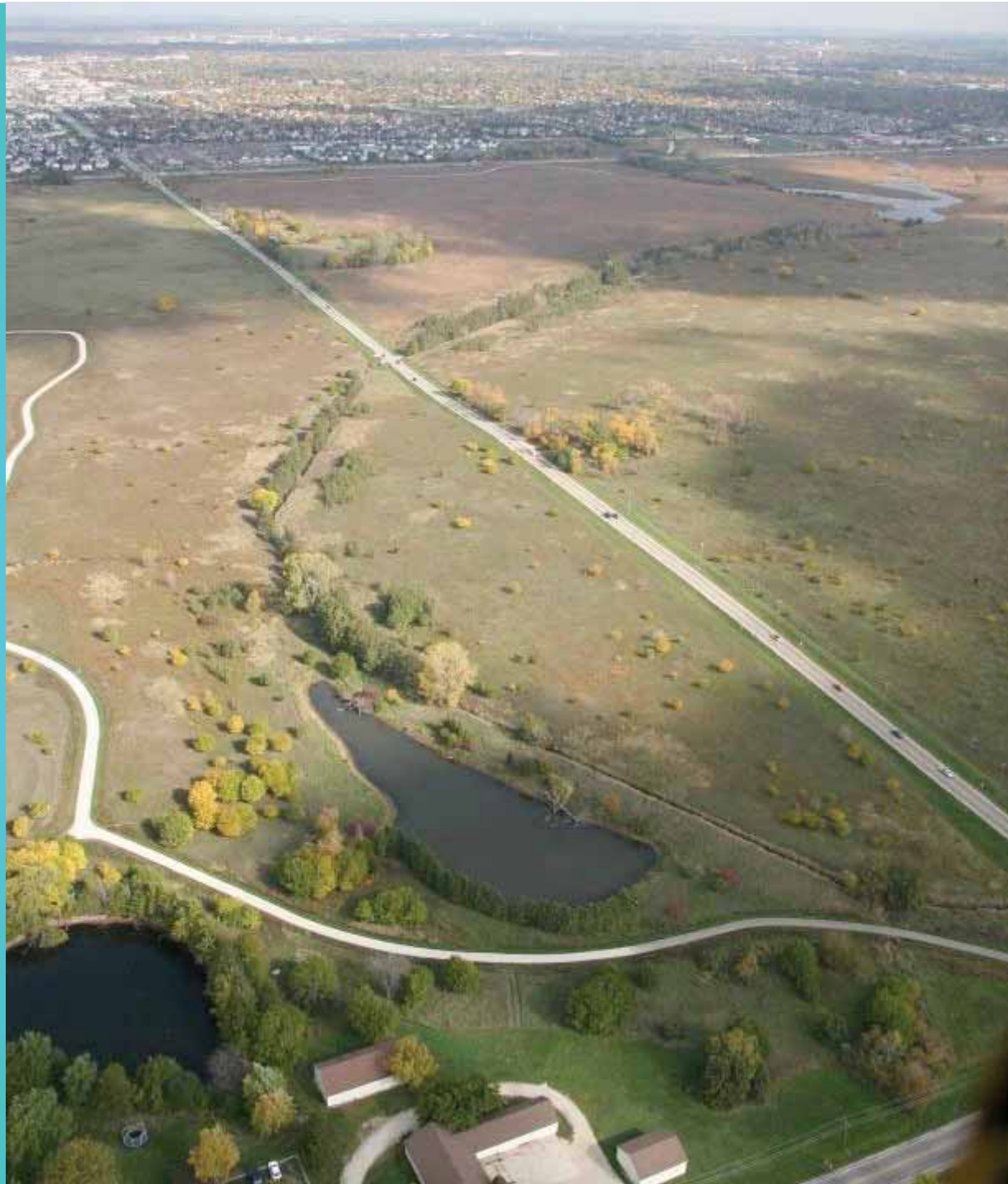






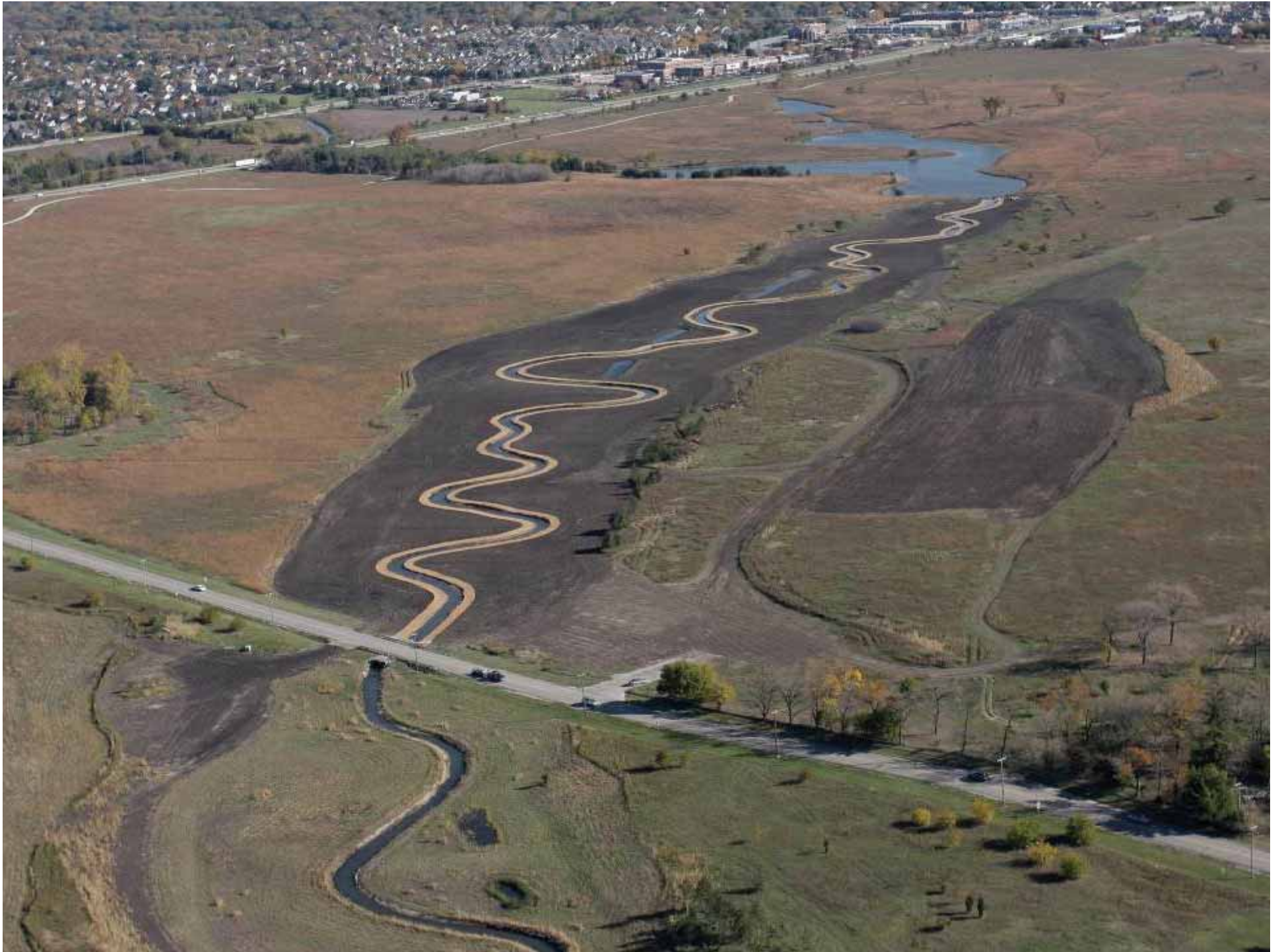
















6 Stages of a Project

- Enthusiasm
- Disillusionment
- Panic
- Search for the guilty
- Punishment of the innocent
- Reward for the non-participants

Spring Brook Stream Meander Project

US Environmental Protection Agency

Illinois Environmental Protection Agency

Illinois Department of Natural Resources

DuPage County

USDA Natural Resource Conservation Service



Learn to Read the River

- Scalable
- Change the entrenchment ratio
- Reconnect with floodplain
- Take the flood plain down
- Lock it in place by redistributing the energy

A landscape photograph showing a narrow stream flowing through a field of yellow wildflowers and green grasses. The stream is in the center, with a rocky bank on the right and a grassy bank on the left. The background features a line of green trees under a grey, overcast sky. The word "Questions?" is written in white serif font across the middle of the image.

Questions?