Ecosystems Past and Present:

An Introduction

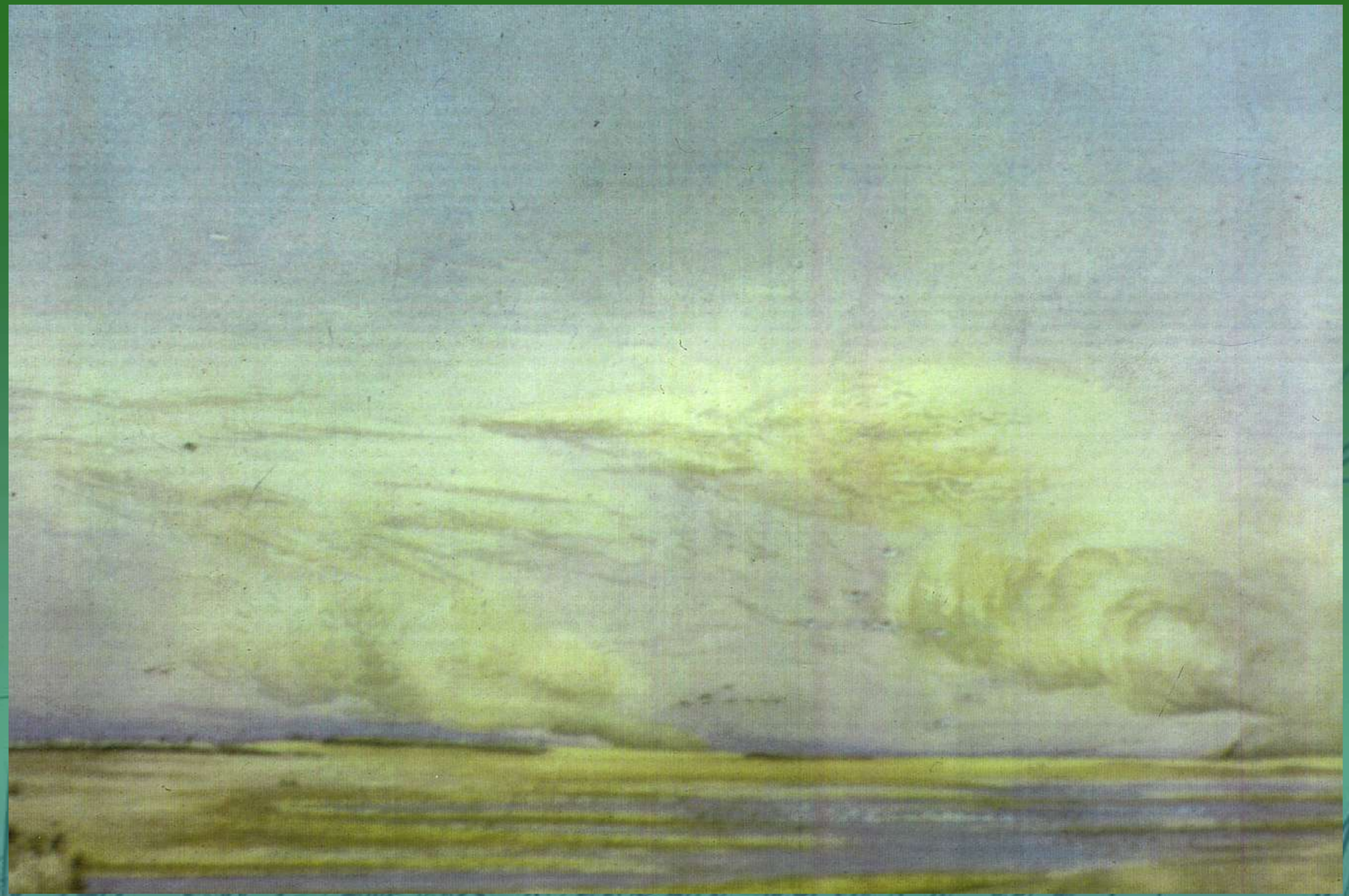
Bringing the science of ecology to all land-use decisions

Ecological Systems

Past & Present

Historic Landscapes and Ecosystems

- Diverse
- Dynamic
- Productive
- Stingy



Ecological Systems

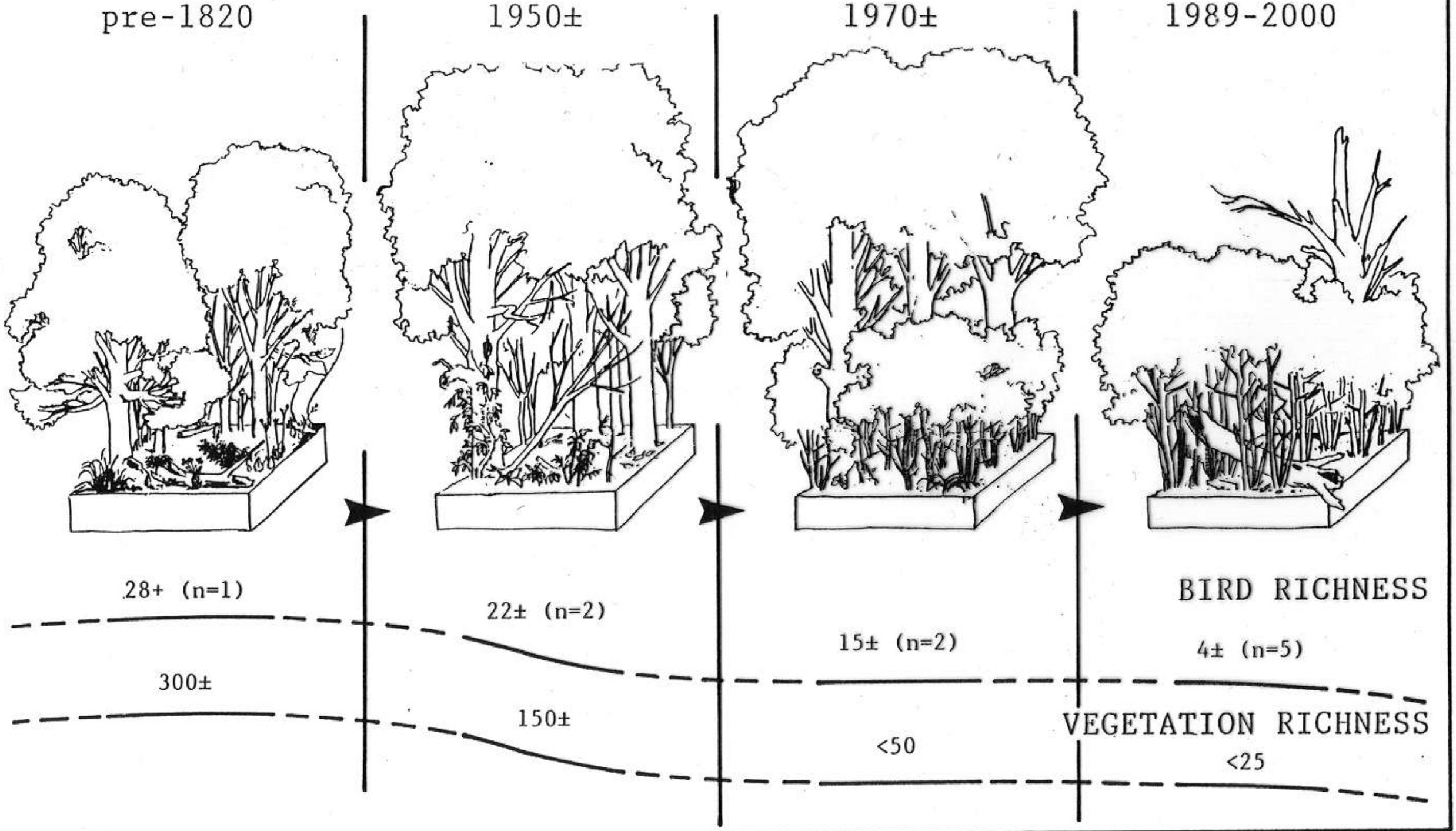
Hydrologic/Topographic Gradient

Degradation of Wetlands

Contaminants in the Ecosystem

Healthy & Degraded Oak Savanna

Trends in Tall Grass Savanna Degradation

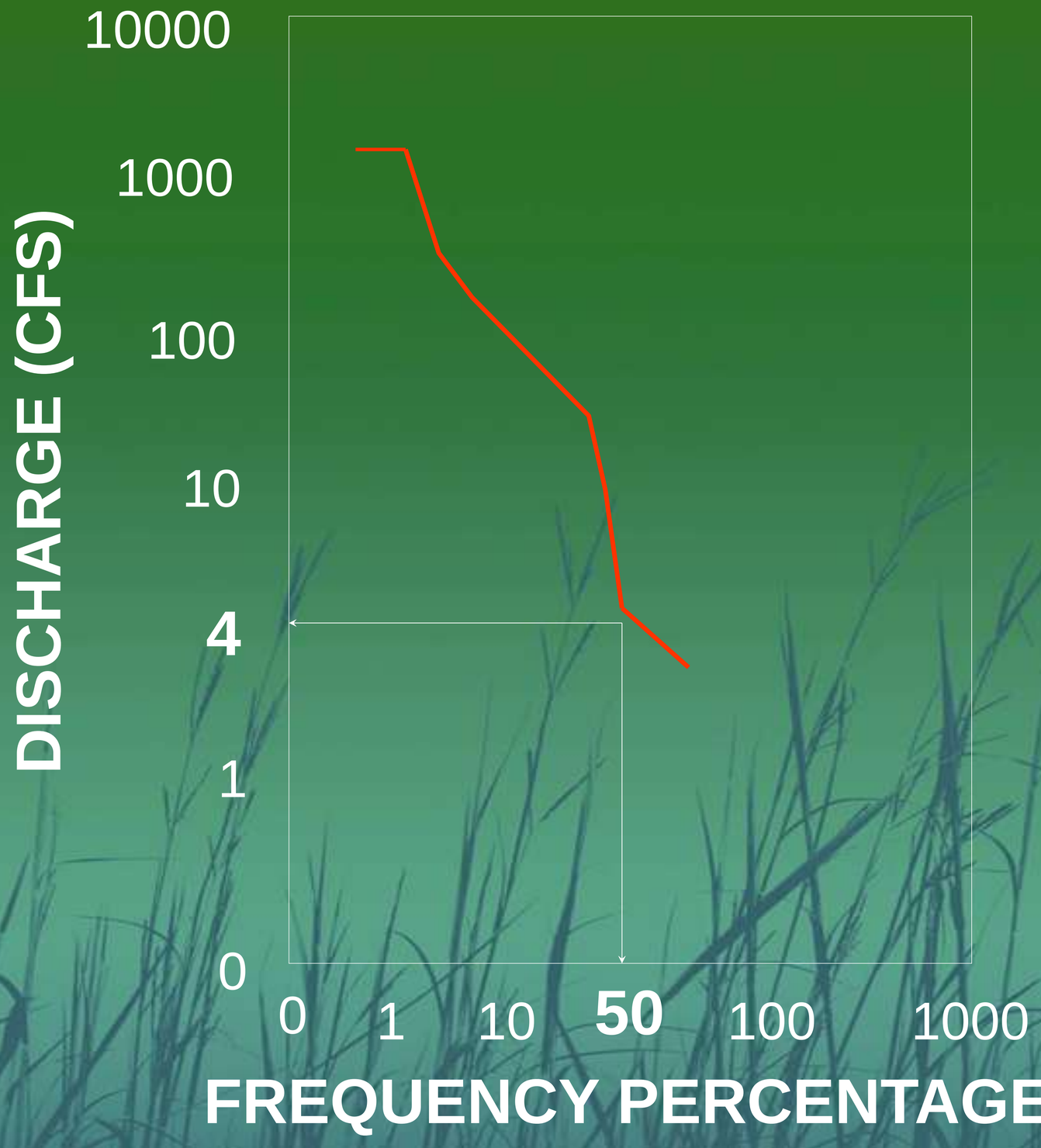


Stream Degradation and Watershed Development Trends

Historic River Swale

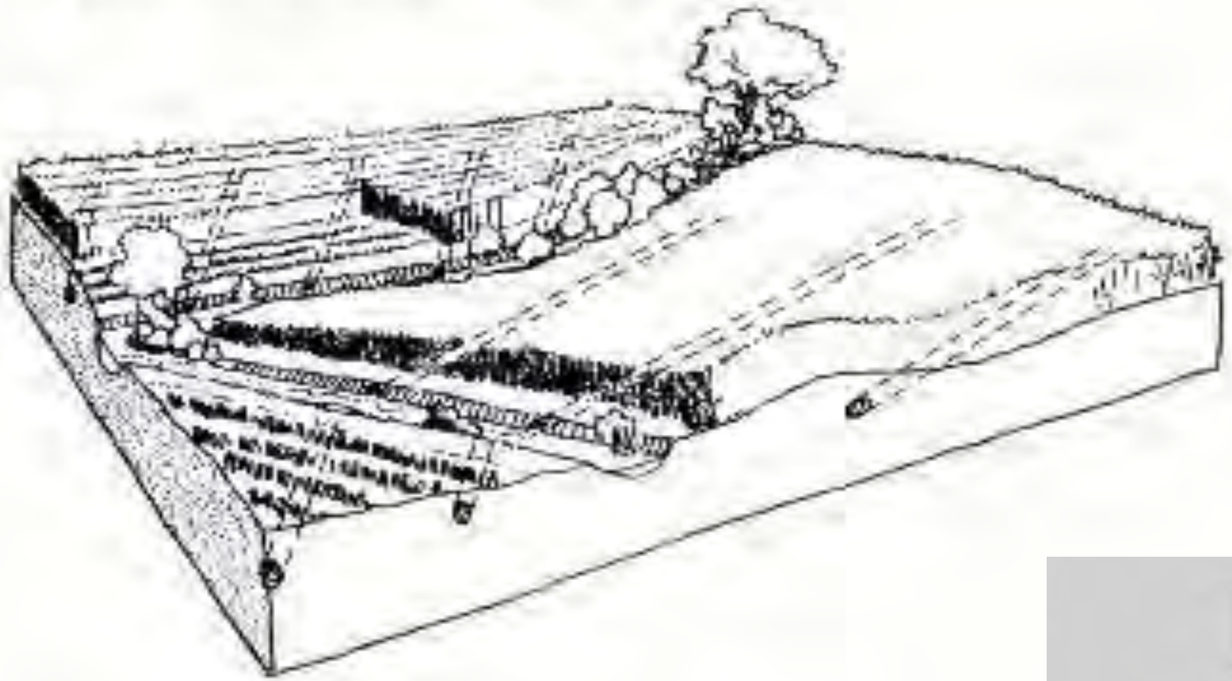

Des Plaines River Watershed
WI
IL
Chicago
IN

STAFF GAGE DATA 1899

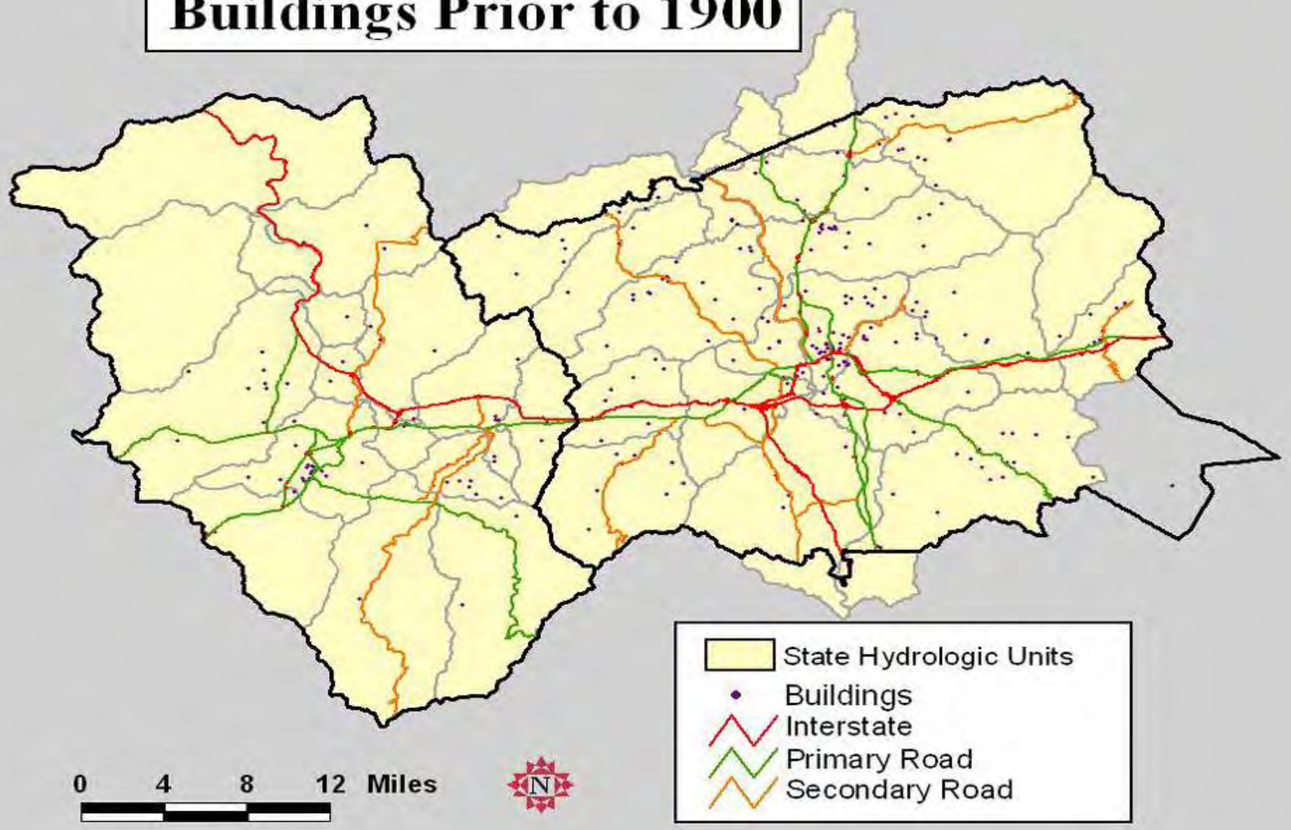


PRE-SETTLEMENT

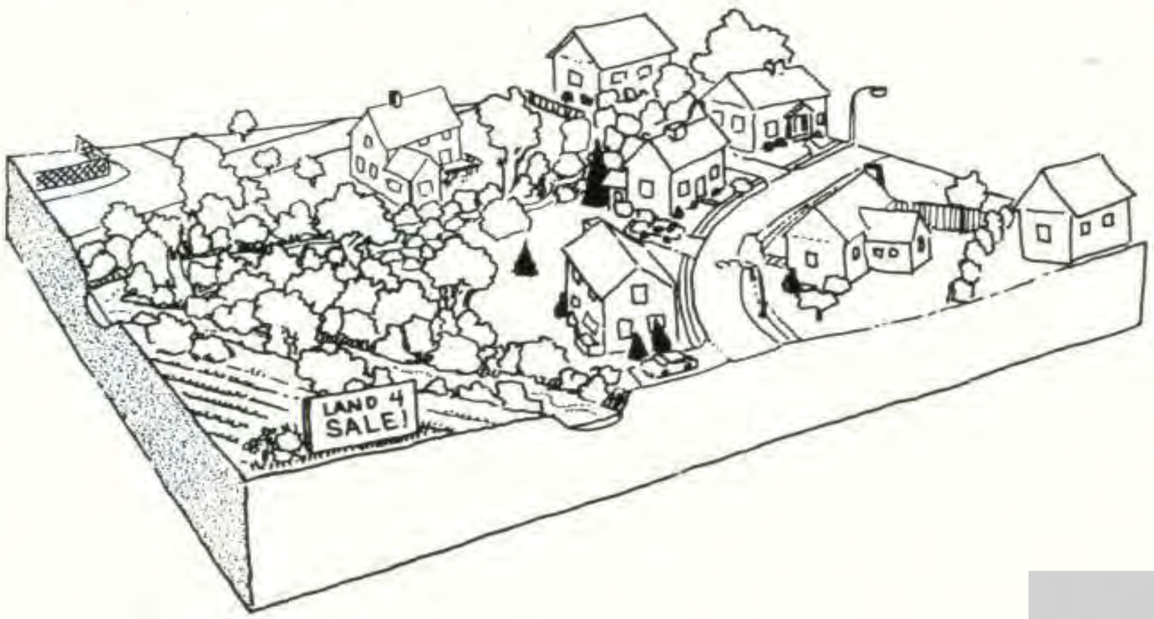
AGRICULTURAL

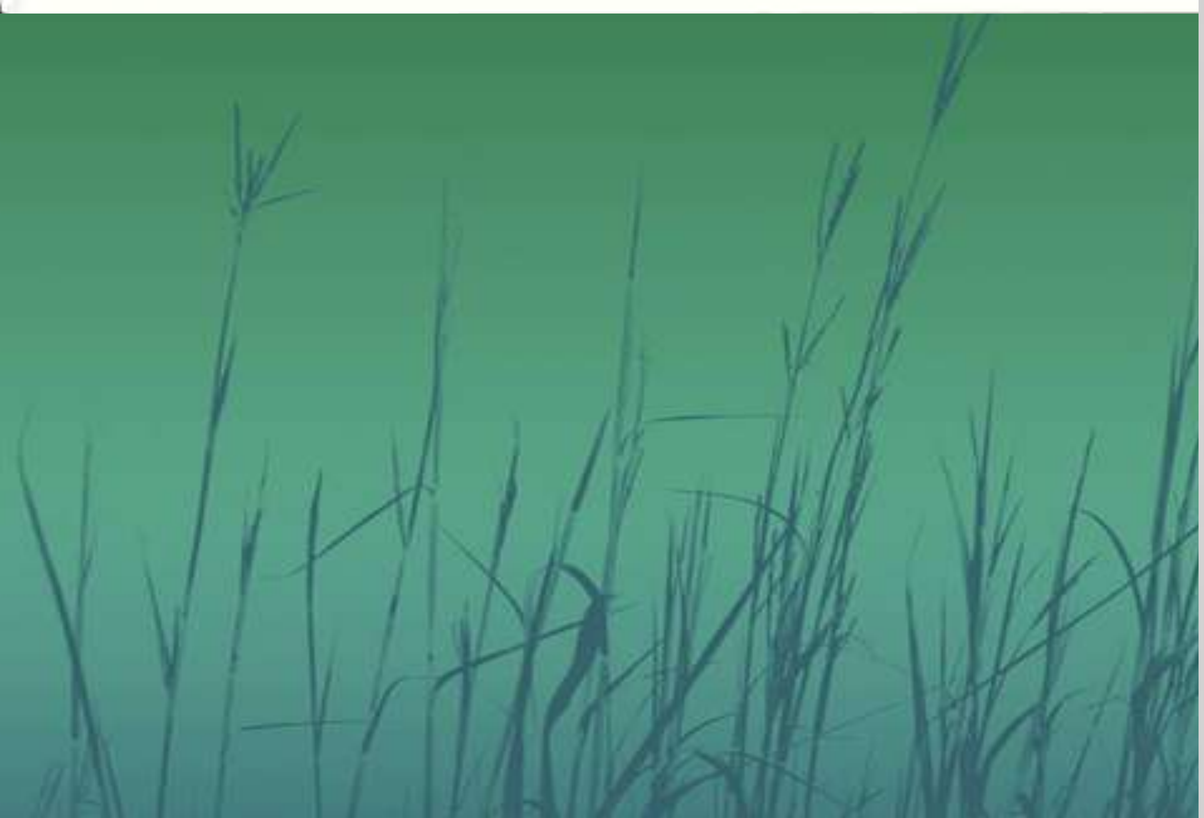


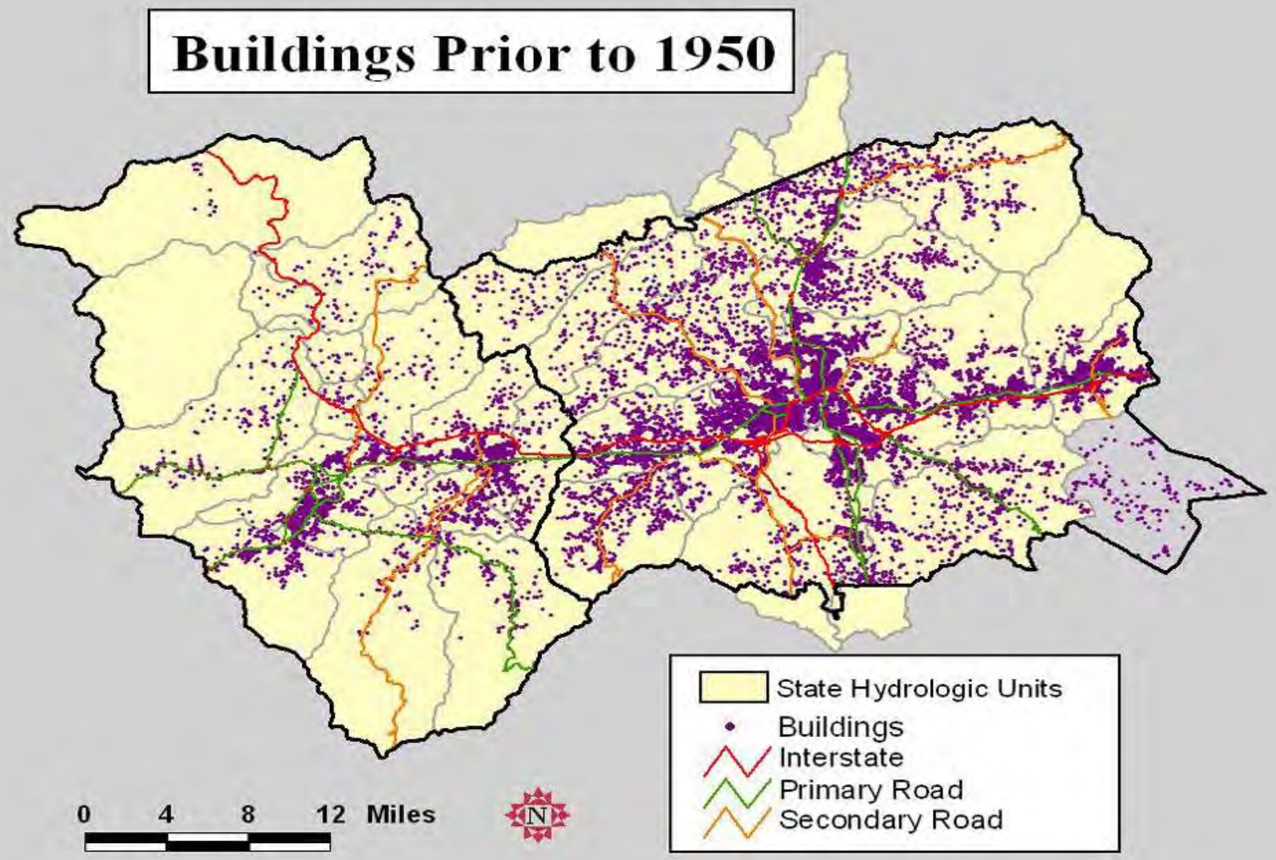
Buildings Prior to 1900



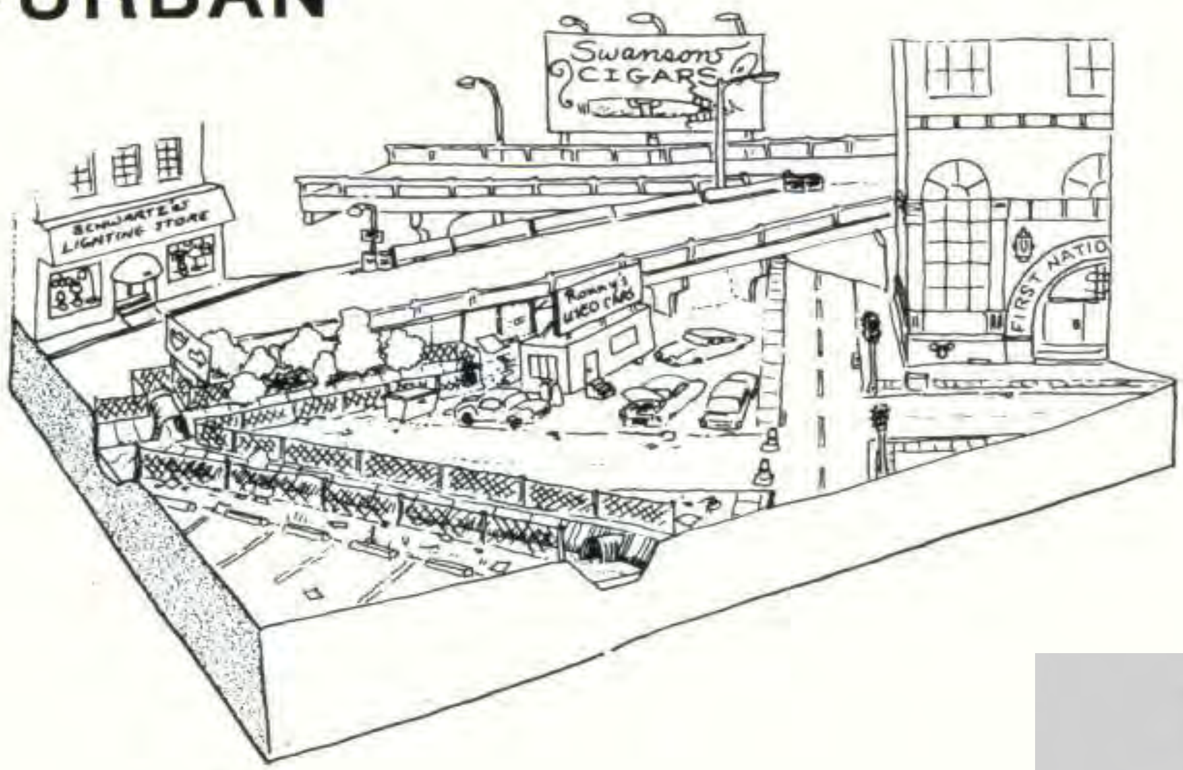
SUBURBAN

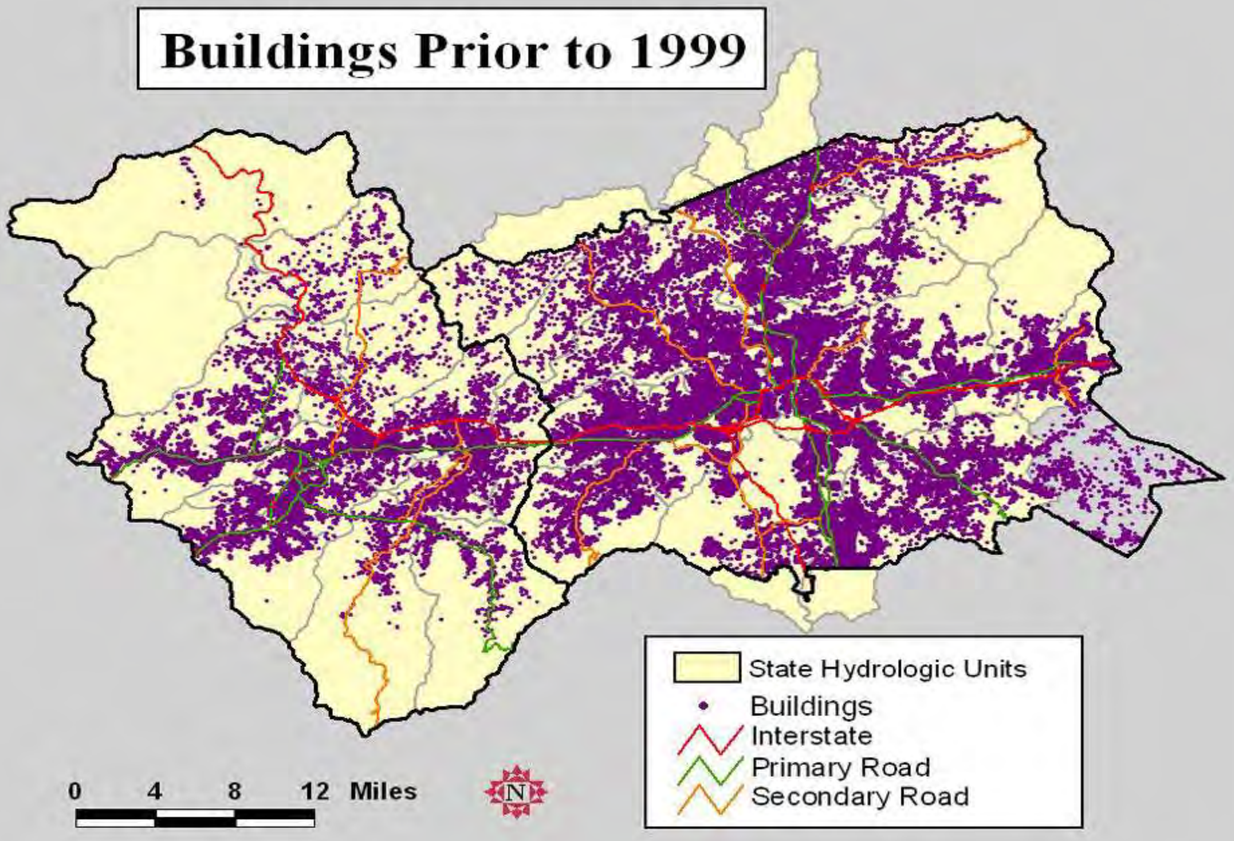

LAND 4
SALE!




Buildings Prior to 1950
State Hydrologic Units
Buildings
Interstate
Primary Road
Secondary Road
0 4 8 12 Miles
N

URBAN


Swanson's CIGARS
SCHWARTZ'S LIGHTING STORE
FIRST NATIO


Buildings Prior to 1999
State Hydrologic Units
Buildings
Interstate
Primary Road
Secondary Road
0 4 8 12 Miles
N

Log-Normal Duration Plot. Des Plaines River at Riverside, IL, 1969-1973

Example Projects

Larger Ecological Restorations

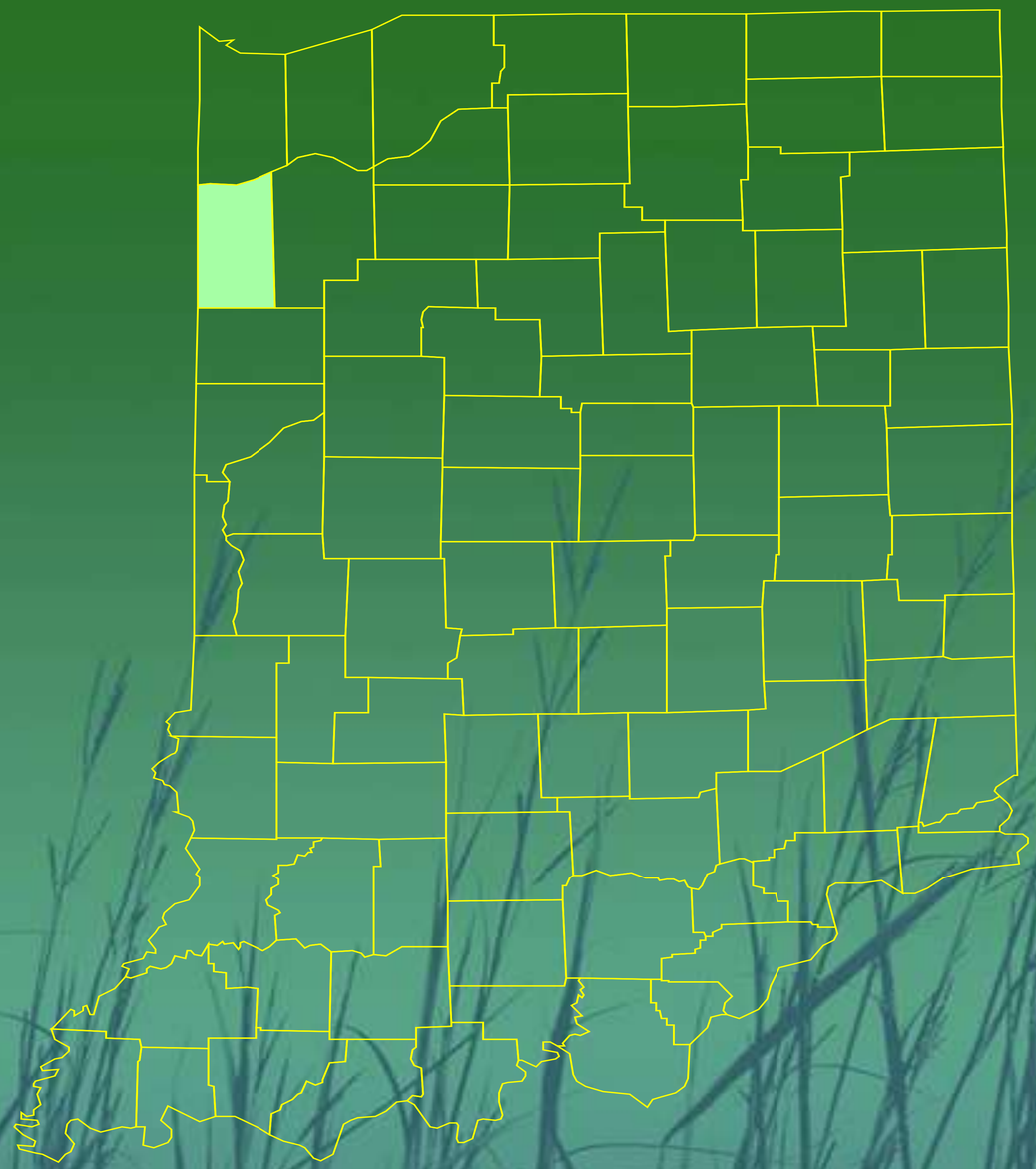
Kankakee Sands, Indiana

<u>Key Features:</u>

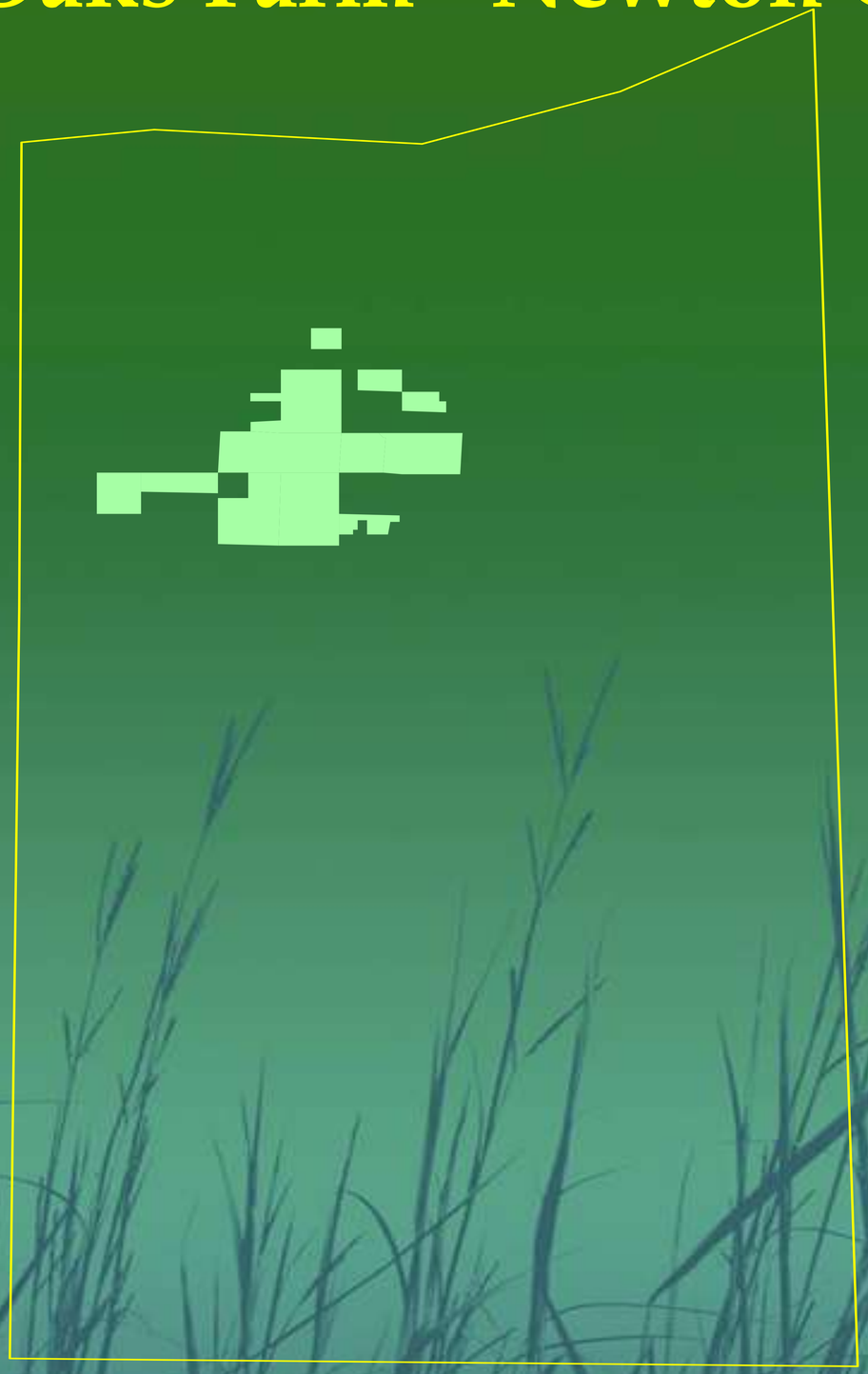
- Hydrology restoration
- Soil restoration
- Vegetation restoration
- Endangered Species restoration

Applied Ecological Services, Inc.™

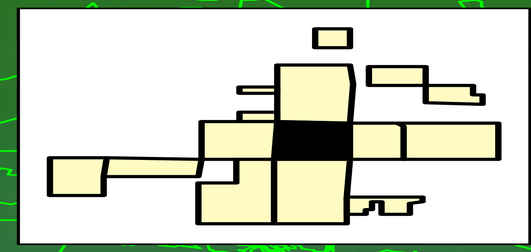
Newton County, Indiana



Fair Oaks Farm - Newton County, IN



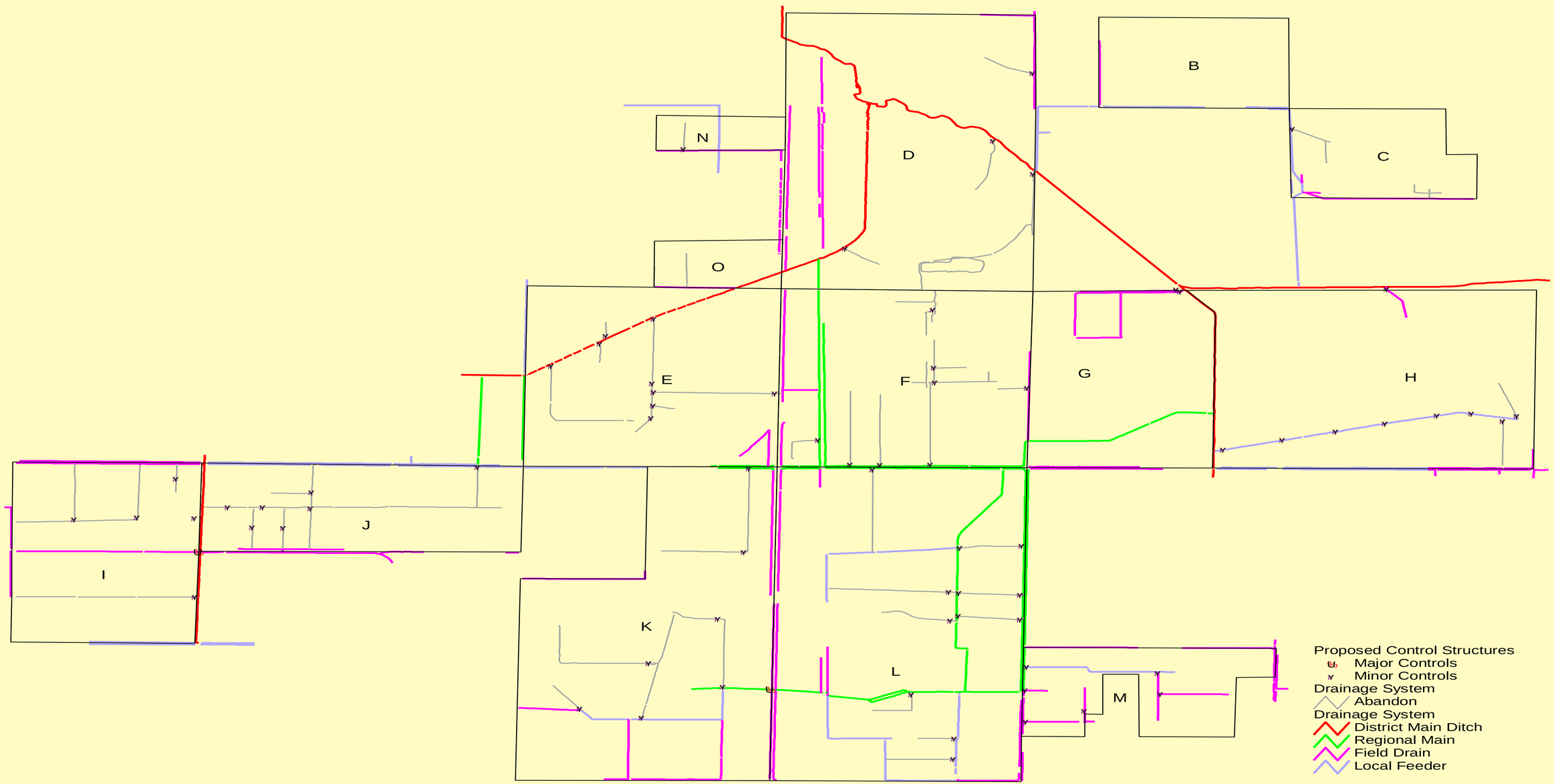
Fair Oaks Farm
Topography



0 1000 2000 Feet

N

Fair Oaks Farm
Ditch Hierarchy and Restoration



Fair Oaks Farm

1997 Digital Aerial Photography & Hydrology

Fair Oaks Farm

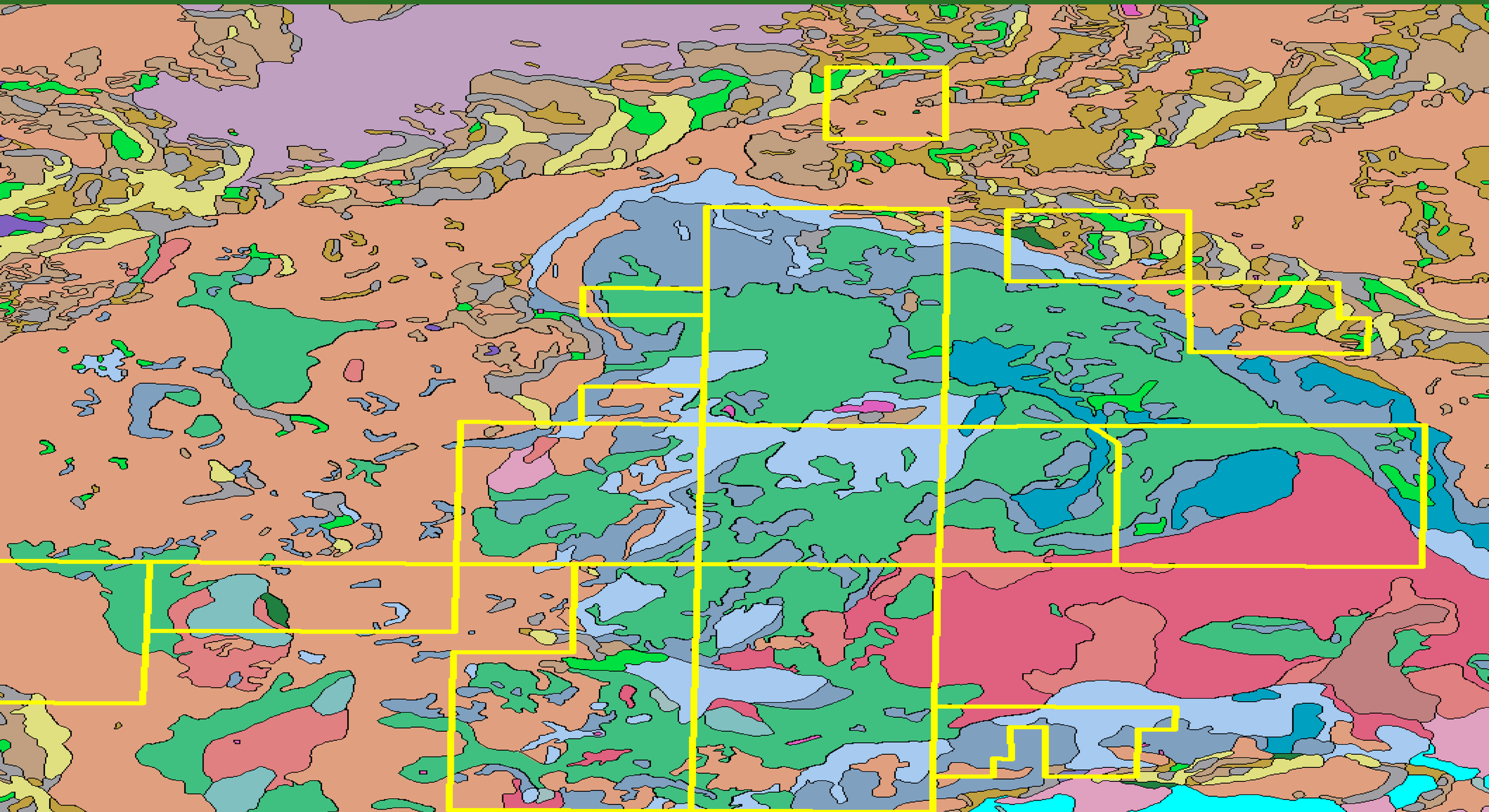
1997 Digital Aerial Photography & Drain Tiles

0 1000 2000 Feet

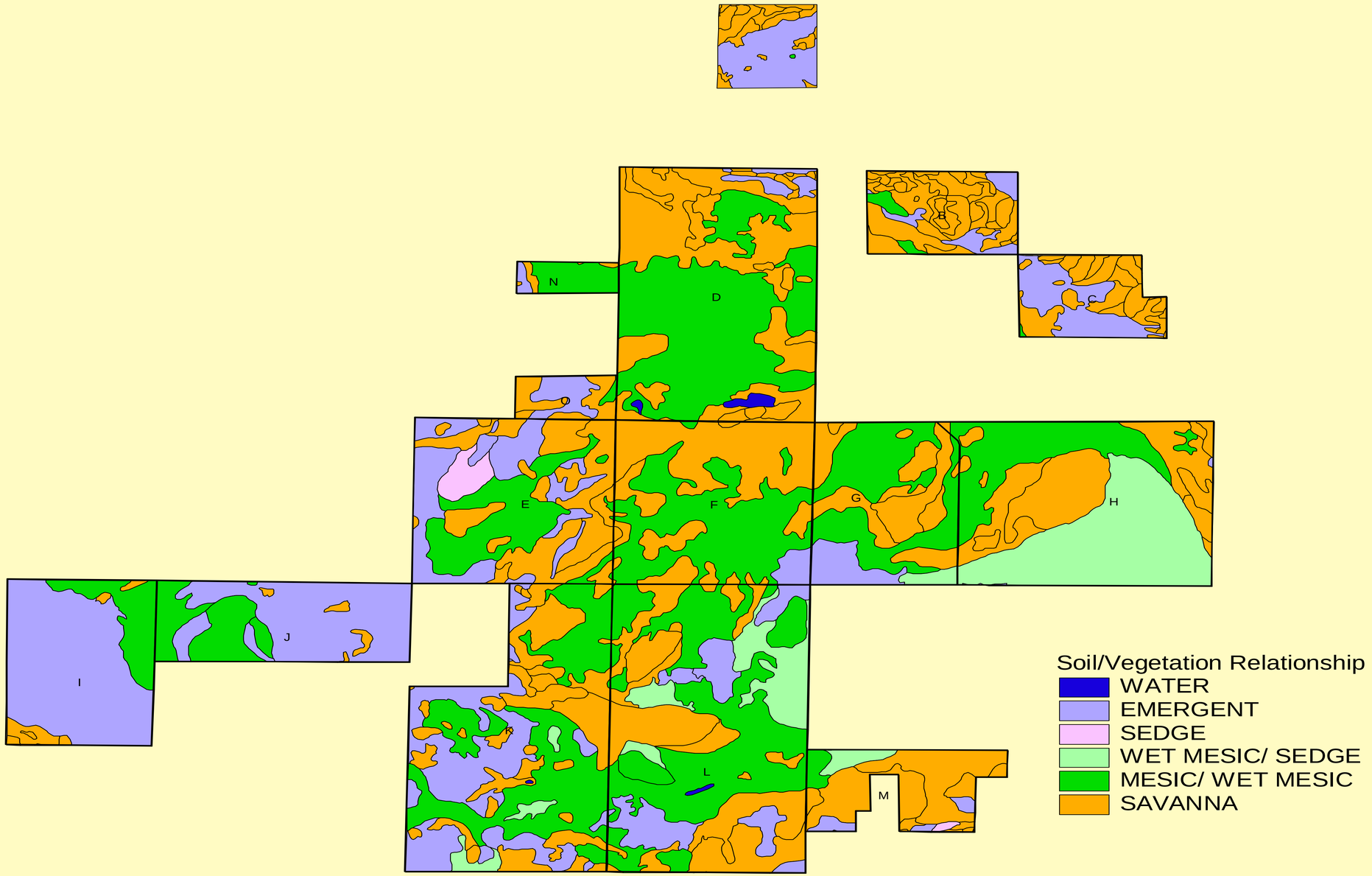
N

Fair Oaks Farm

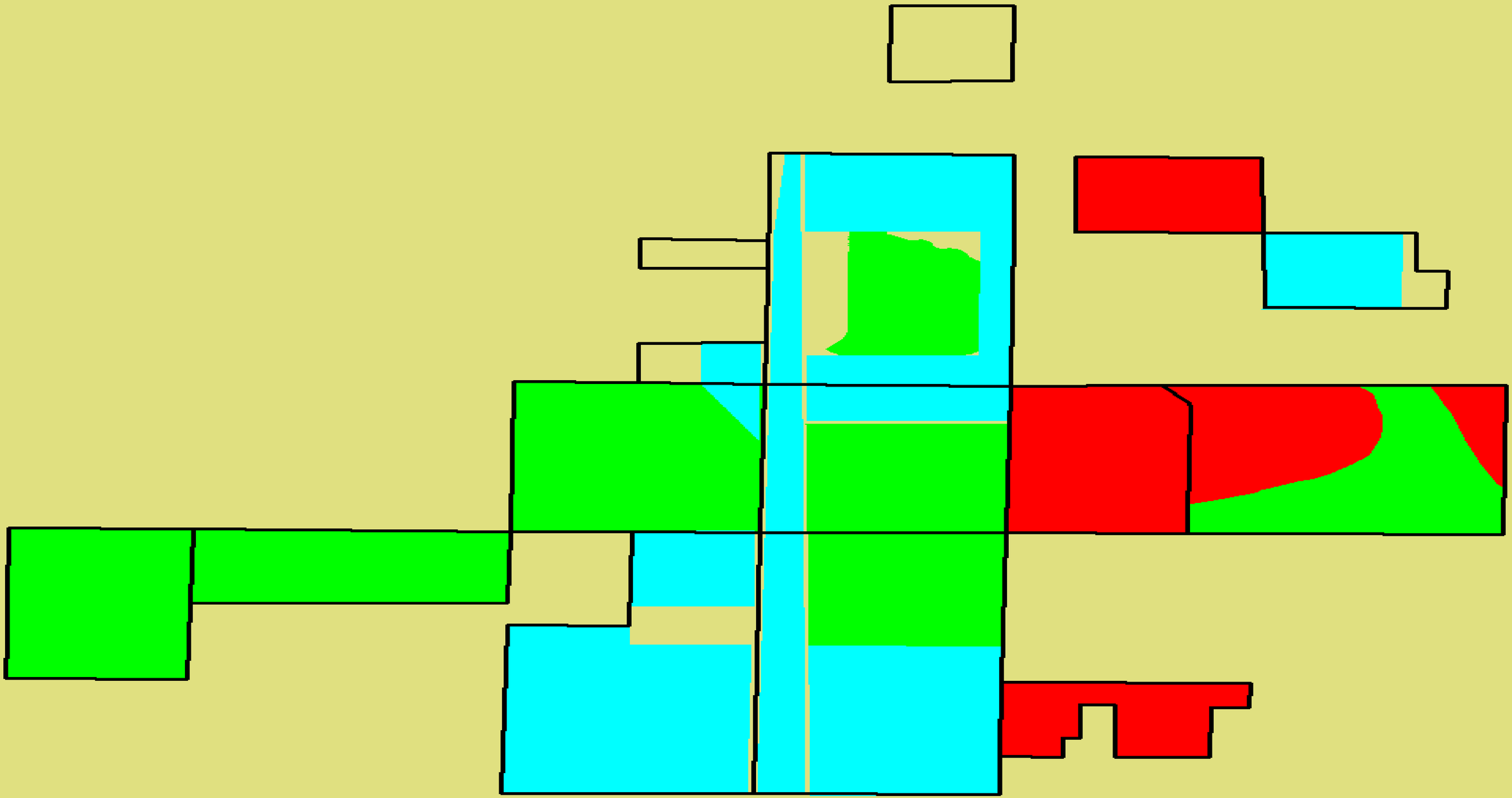
Soils and Seed Banks



Fair Oaks Farm
Restoration plans



Fair Oaks Farm
Field Phasing



Excavating Swales, Disabling Tiles, Backfilling Ditches

Seeding & Planting

Seeding at Scale

Soil Bio Engineering of Degraded Channels

Brush Layering Technique

Soil BioEngineering of Degraded Channels

Stabilized Channel

1st growing season

8th growing season

Gathering & Educational Spaces

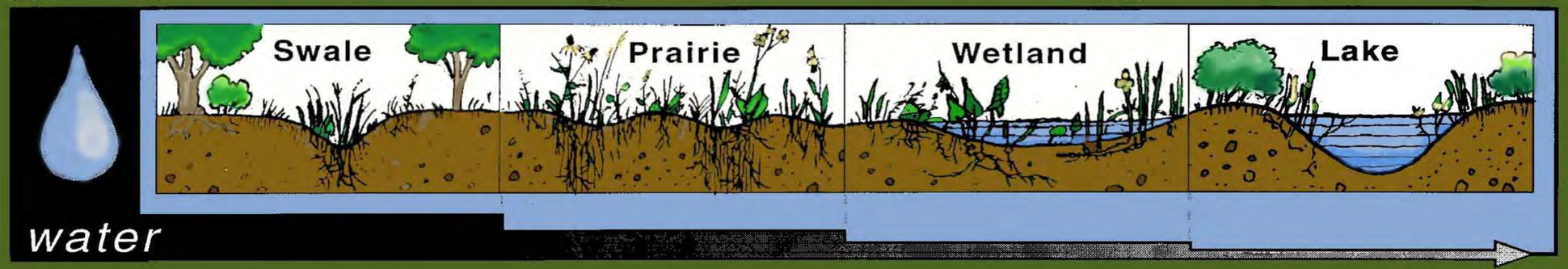
Example Projects

Conservation Development

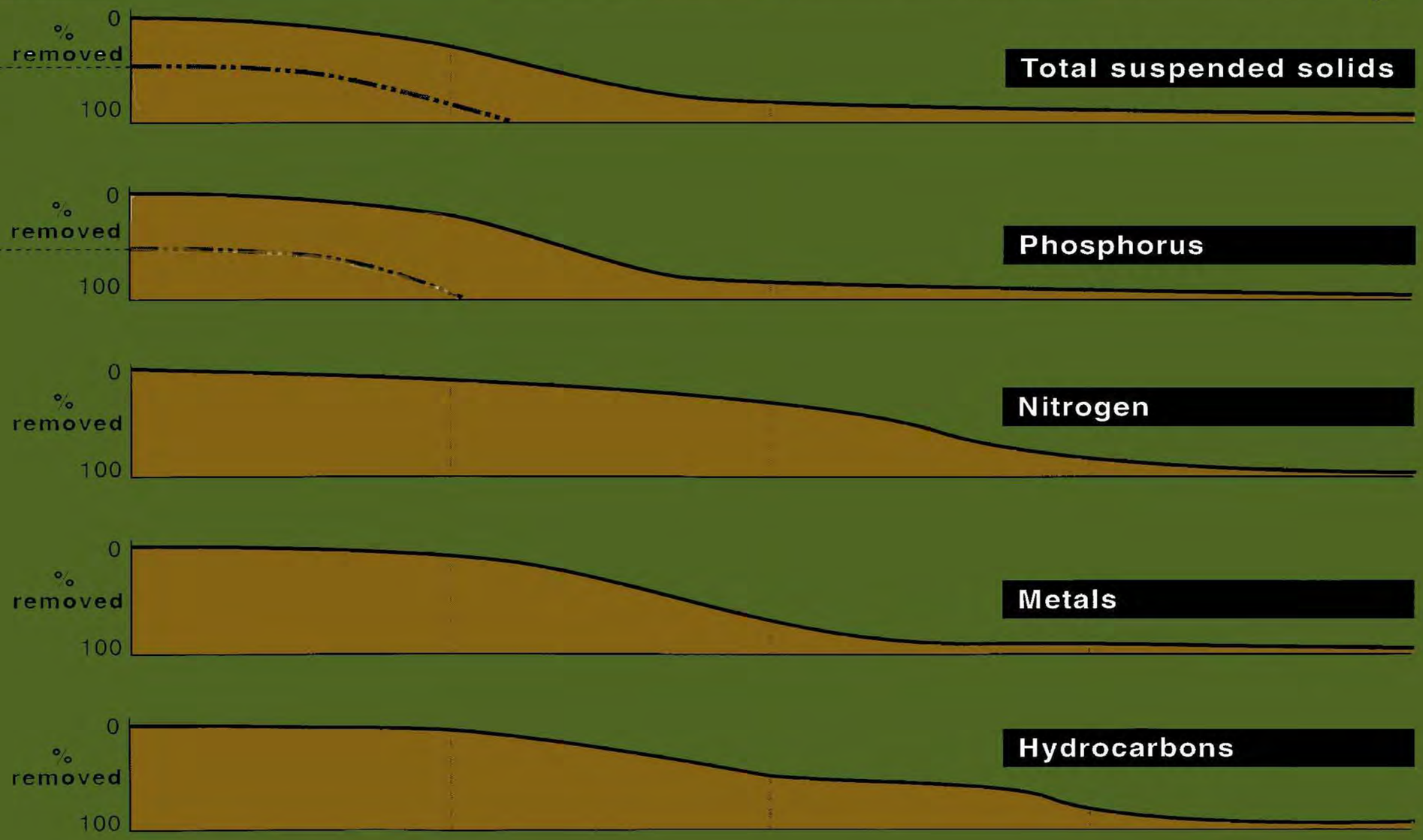
Prairie Crossing - Plan & Photographs

Ecology, Economy and Culture

Stormwater Treatment Train

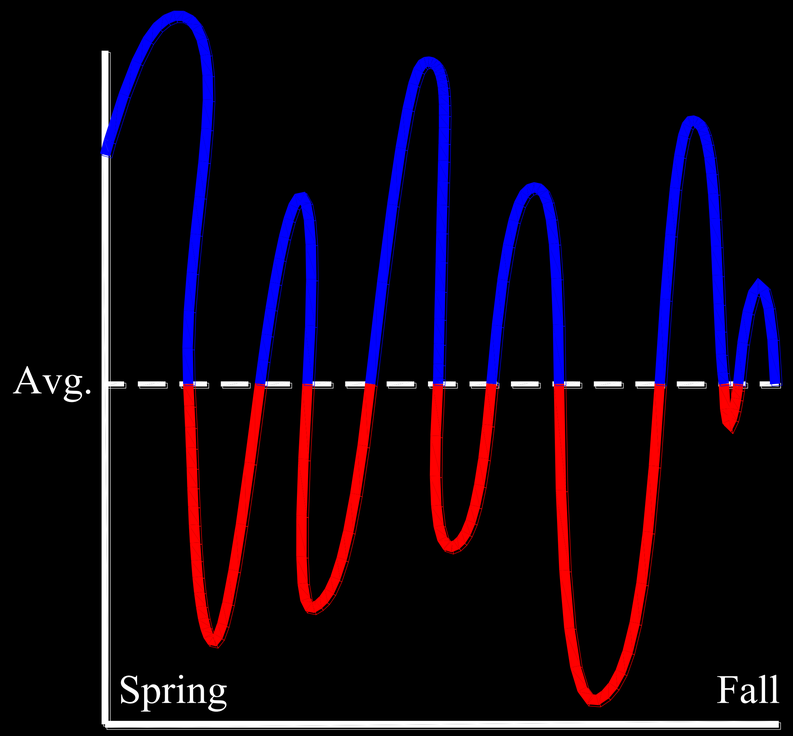


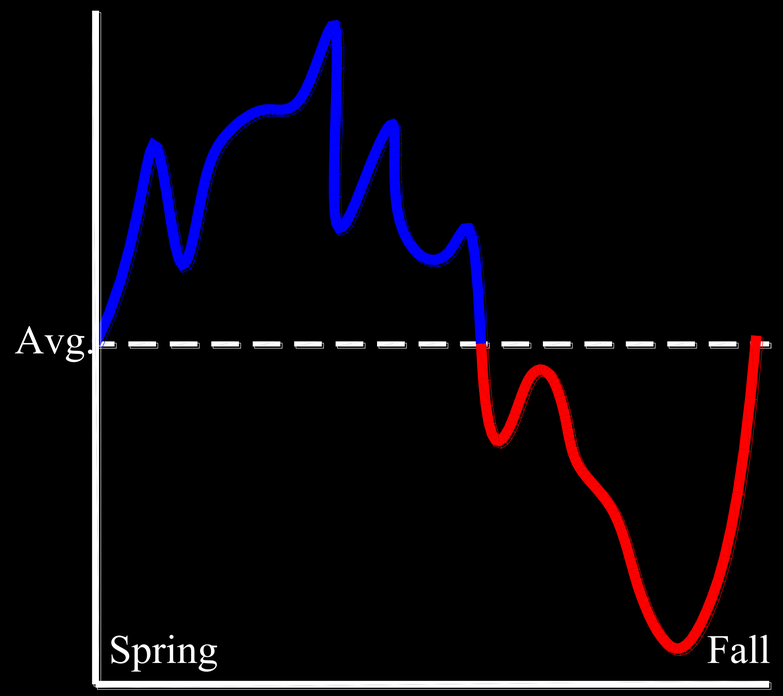
Source management



Annual Hydrographs and Normal Average Water Levels for Restored Wetlands.

Designed by Engineers vs. Ecologists





Engineering Approach to Hydrology

* Unpredictable Swings in Water Levels
* Creates Biological Instability
* Promotes Habitats for Weeds and Poor Aesthetics
* Promotes Poor Water Quality

Ecologist Approach to Hydrology

* Annual Seasonal High and Low
* Predictable Hydraulics and Seasonal Trajectory
* Promotes Habitat for Stable yet Dynamic Plant Communities (Diversity of Plants and Animals)

File name: C:\DRAWINGS\1997\97-45\HYDRLGY

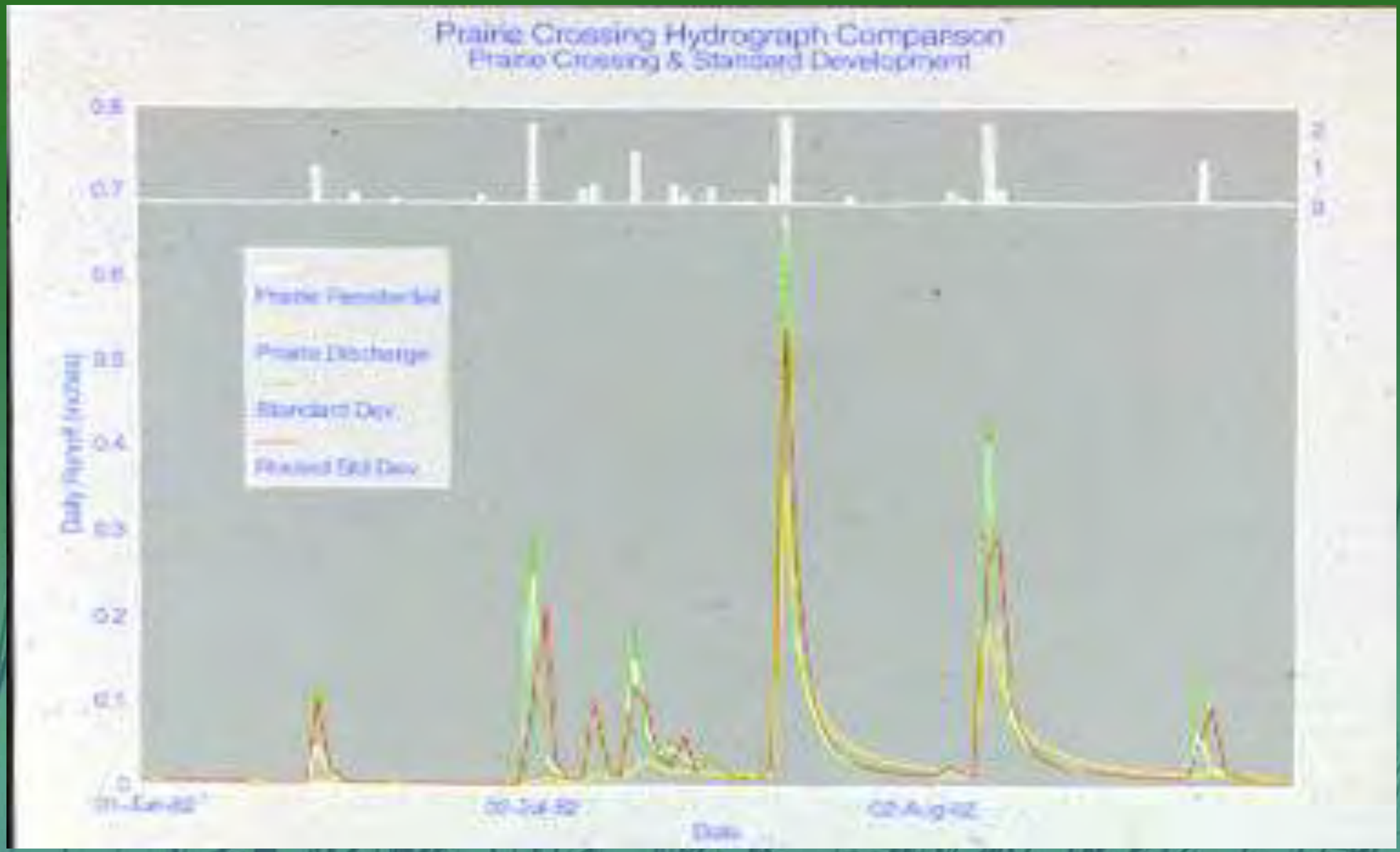

MEADOW LOTS
17 LOTS
14 LOTS
EXISTING COUNTY ZONING
NC/AG
10 LOTS
7 LOTS

Formal Native Landscapes

Native Landscaping

"The Wild Look"

Hydrograph Comparison



Prairie Crossing - Lake Water Quality

Conservation Design – Prairie Crossing

Thank You

Questions?

Taylor Creek Restoration Nurseries™

Spring Lake Restoration Nurseries™

Kaw River Restoration Nurseries™

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Ecological Systems Approach™
By Applied Ecological Services, Inc.