



WILDLIFE RECLAMATION OPPORTUNITIES FIVE DECADES OF DIVERSITY



**WILDLIFE
SUMMIT**

*June 22-23, Louisville, KY
at the Brown Hotel*



*Hosted by the U.S. Office
of Surface Mining*

**Jack Nawrot
Senior Scientist**

**Coop Wildlife Research Lab
Southern Illinois University
Carbondale Illinois**

**MINED LAND RECLAMATION:
OPPORTUNITIES FOR FISH AND
WILDLIFE HABITAT ENHANCEMENT**





WILDLIFE SUMMIT

*June 22-23, Louisville, KY
at the Brown Hotel*

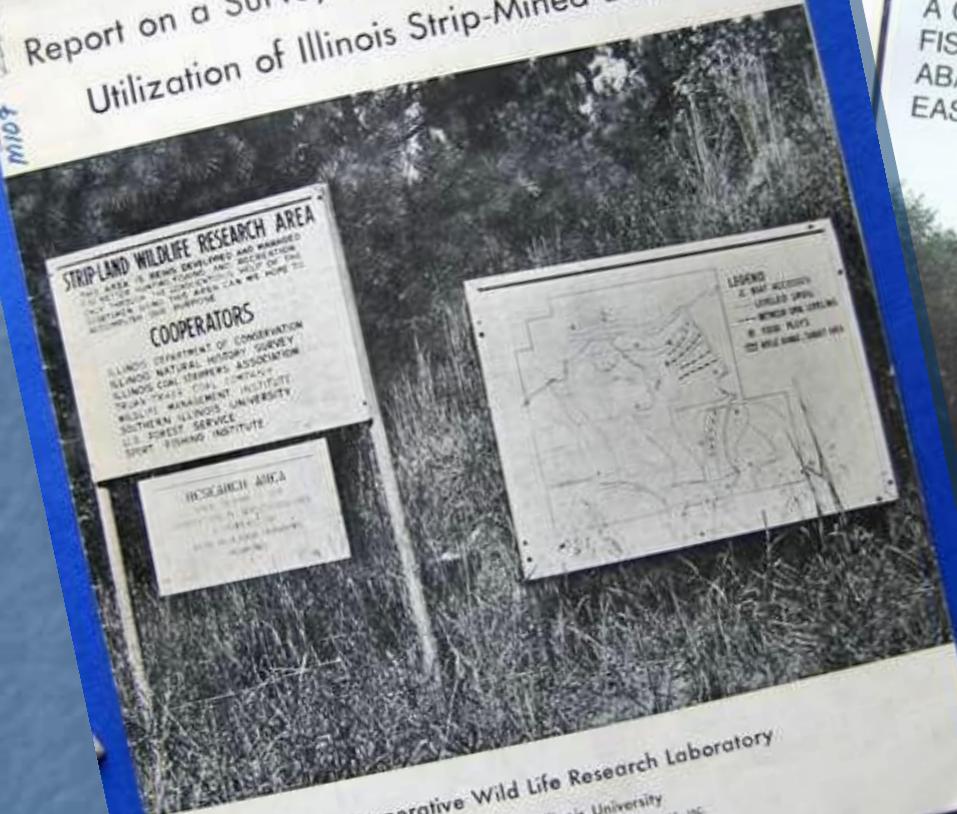




Report on a Survey of Potential Recreational
Utilization of Illinois Strip-Mined Lands

By D. D. Williams

11019



STRIP-LAND WILDLIFE RESEARCH AREA
THIS AREA IS BEING DEVELOPED AND MANAGED
BY THE U.S. BUREAU OF LAND MANAGEMENT AND RECREATION
WITH THE COOPERATIVE HELP OF THE
FOLLOWING AGENCIES AND INDIVIDUALS:
COOPERATORS

- ILLINOIS DEPARTMENT OF CONSERVATION
- ILLINOIS NATURAL HISTORY SURVEY
- ILLINOIS COAL MINERS ASSOCIATION
- TRUMAN STATE COLLEGE
- WISCONSIN MANAGEMENT INSTITUTE
- SOUTHERN ILLINOIS UNIVERSITY
- U.S. FOREST SERVICE
- SPORT FISHING INSTITUTE

RESEARCH AREA
1. AREA OF RESEARCH
2. AREA OF RESEARCH
3. AREA OF RESEARCH



LEGEND
A. ROAD ACCESS
B. UNMULDED SOIL
C. MULDED SOIL
D. TREE PLANTS
E. WILD BIRD HABIT AREA

Cooperative Wild Life Research Laboratory
Southern Illinois University

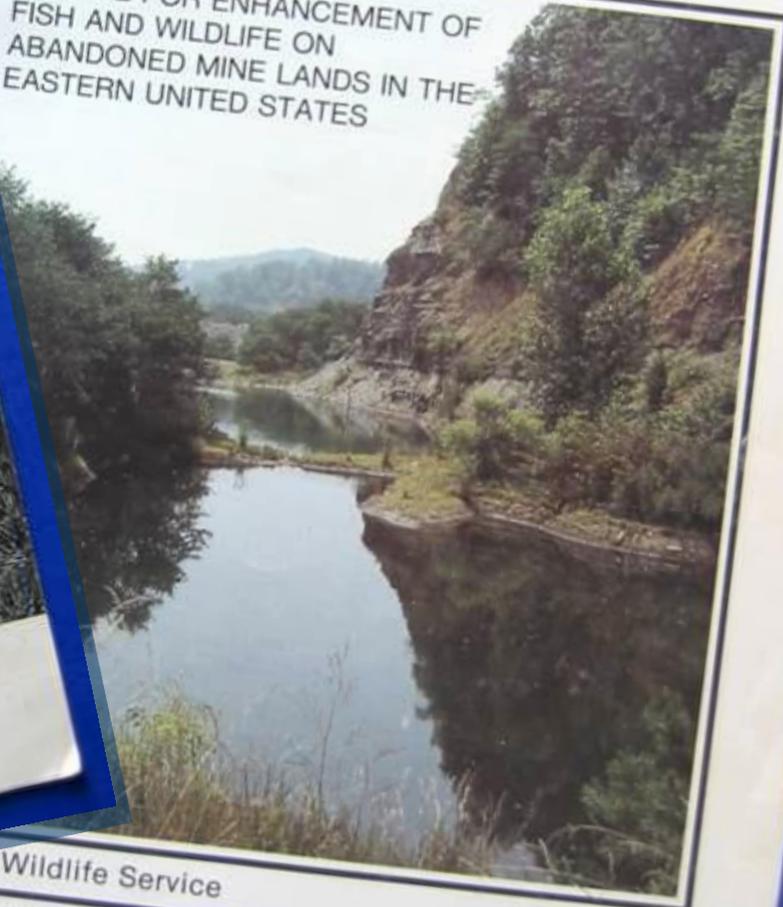
PUBLISHED BY: MID-WEST COAL PRODUCERS INSTITUTE, INC.
JUNE 1982

CWRL-OAKLAND

Biological Services Program

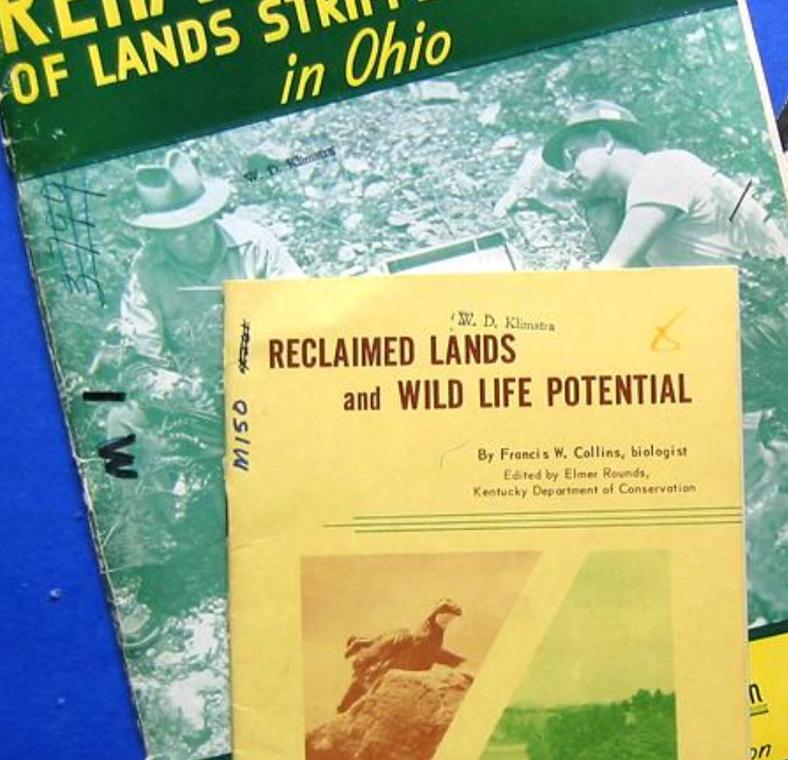
FWS/OBS - 80167
APRIL 1982

A GUIDE FOR ENHANCEMENT OF
FISH AND WILDLIFE ON
ABANDONED MINE LANDS IN THE
EASTERN UNITED STATES



Fish and Wildlife Service
U.S. Department of the Interior

REHABILITATION OF LANDS STRIPPED FOR COAL *in Ohio*



W. D. Klumstra

RECLAIMED LANDS and WILD LIFE POTENTIAL

By Francis W. Collins, biologist
Edited by Elmer Rounds,
Kentucky Department of Conservation

The cover is yellow and features a photograph of a horse running on a grassy hill. The horse is in the foreground, and the background shows a green landscape with a path or road. The text is in black and red.

Published by the DIVISION OF STRIP MINE RECLAMATION
Paul P. Cannon, Director

DEPARTMENT of CONSERVATION
Commonwealth of Kentucky
Loban P. Jackson, Commissioner

W. D. Klumstra

Report on a Survey of Potential Recreational Utilization of Illinois Strip-Mined Lands

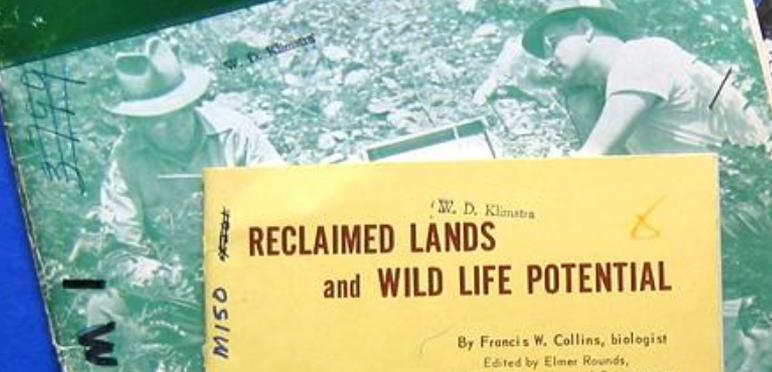
STRIP-LAND WILDLIFE RESEARCH AREA

COOPERATORS

The cover is white and features a black and white photograph of a horse running in a field. The horse is in the foreground, and the background shows a field with some trees and a fence. The text is in black and red.

Wild Life Research Laboratory
Southern Illinois University
BEST COPY AVAILABLE
MAY 1967

REHABILITATION OF LANDS STRIPPED FOR COAL *in Ohio*



RECLAIMED LANDS and WILD LIFE POTENTIAL

By Francis W. Collins, biologist
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Loban P. Jackson, Commissioner

Report on a Survey of Potential Recreational Utilization of Illinois Strip-Mined Lands

W. D. Klossner

STRIP-LAND WILDLIFE RESEARCH AREA
UTTERED IN RECONSTRUCTION AND MANAGED
TO PROVIDE RECREATION AND RECEPTION
TO THE PUBLIC. THE AREA CAN BE USED TO
COOPERATORS
DIVISION OF CONSERVATION
HISTORICAL SOCIETY
ASSOCIATION
UNIVERSITY



“New mined lands.....opportunities for wildlife.....
How.....?”

The first is the mine OPERATOR. He owns the land

The second is the State Division.....responsible to the people to see
that the maximum usage is gained in restoring a natural resource.”



HABITAT RESTORATION NOTES FOR MINED LAND

WILDLIFE

USER GUIDE For Mining and Reclamation

PRACTICES FOR PROTECTING AND ENHANCING FISH AND WILDLIFE ON COAL SURFACE-MINED LAND IN THE SOUTH CENTRAL U.S.

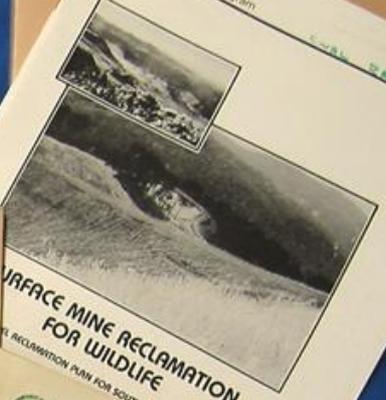
COAL SURFACE MINING RECLAMATION AND FISH AND WILDLIFE RELATIONSHIPS IN THE EASTERN UNITED STATES

COAL SURFACE MINING RECLAMATION AND WILDLIFE RELATIONSHIPS IN THE EASTERN UNITED STATES

A GUIDE FOR VEGETATING SURFACE-MINED LANDS FOR WILDLIFE IN EASTERN KENTUCKY AND WEST VIRGINIA



REVEGETATING SURFACE MINED LANDS IN TEXAS



SURFACE MINE RECLAMATION FOR WILDLIFE

Planning and Management of Mine-Cut Lakes at Surface Coal Mines

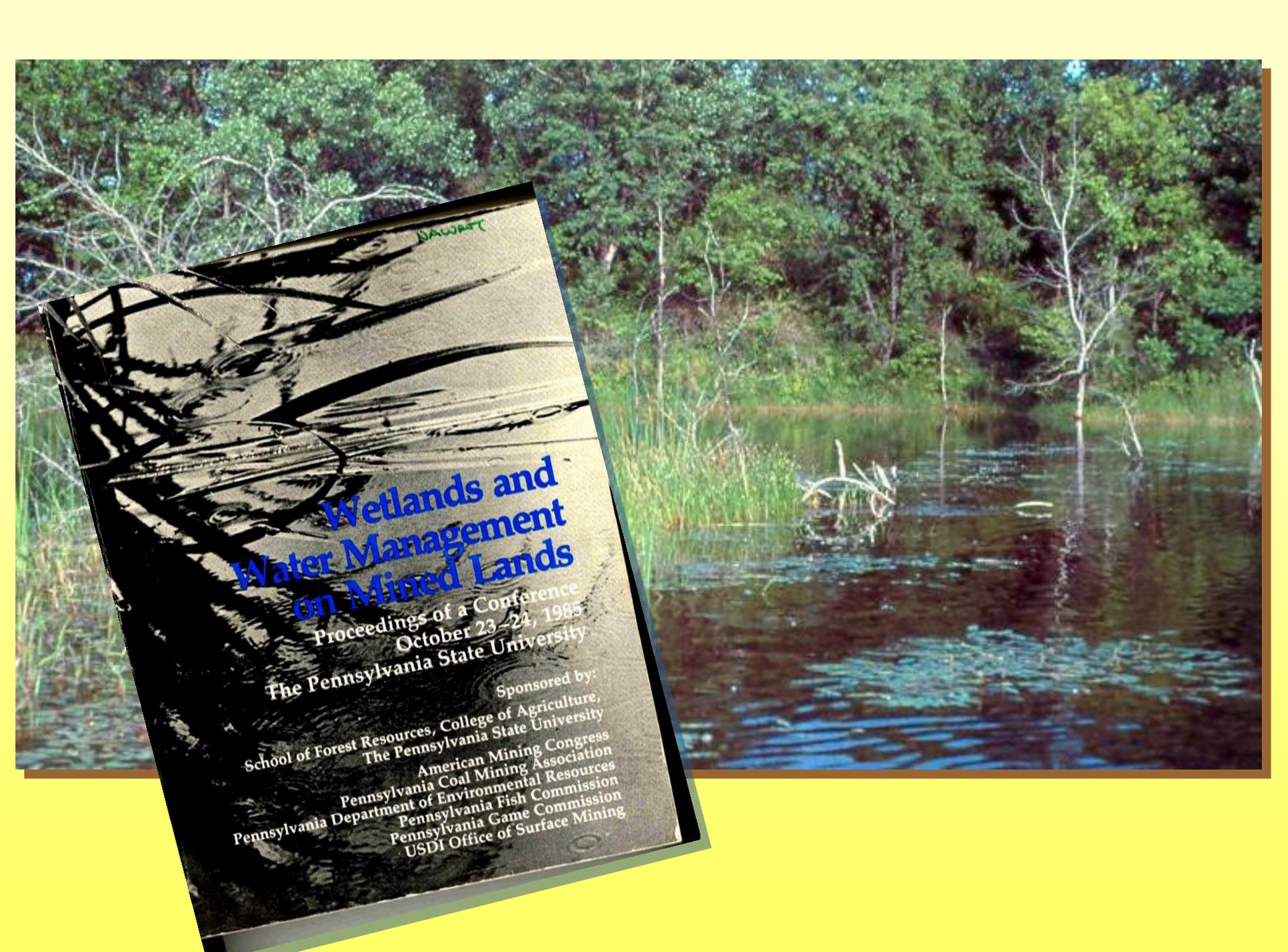
BEST CURRENT PRACTICES FOR FISH AND WILDLIFE ON SURFACE-MINED LANDS IN THE EASTERN UNITED STATES

A GUIDE FOR ENHANCMENT OF FISH AND WILDLIFE ON ABANDONED MINE LANDS IN THE EASTERN UNITED STATES

SURFACE MINING AND FISH/WILDLIFE NEEDS IN THE EASTERN UNITED STATES

PRACTICES FOR PROTECTING AND ENHANCING FISH AND WILDLIFE ON COAL SURFACE-MINED LAND IN CENTRAL AND SOUTHERN APPALACHIA

Proceedings of a Symposium



NAWART

Wetlands and Water Management on Mined Lands

Proceedings of a Conference
October 23-24, 1985

The Pennsylvania State University

Sponsored by:

- School of Forest Resources, College of Agriculture,
The Pennsylvania State University
- American Mining Congress
- Pennsylvania Coal Mining Association
- Pennsylvania Department of Environmental Resources
- Pennsylvania Fish Commission
- Pennsylvania Game Commission
- USDI Office of Surface Mining

From floodplain to farming to coal mining to freshwater marsh—Banner Marsh State Fish and Wildlife Area has transformed into a unique wildlife area along the Illinois River.

Metamorphosis of the Landscape



Twenty years after the area was surface-mined for coal, Banner Marsh State Fish and Wildlife Area has developed into a premier wetland, drawing a variety of birds, including killdeer, great blue herons and ring-billed gulls.

Story By Kathy Andrews
Photos By Adele Hodde



10 / *OutdoorLife* June 2005

Frank Belrose was not known for having idle time. This world-renowned biologist, who died earlier this year at 88, studied the habits and habitats of Illinois River valley waterfowl since 1938, and spent hours driving the reaches of the valley between Havana and Peoria.

That travel time gave him time to watch the biologically rich valley change. Where backwater lakes and bottomland timber once stood, supporting hundreds of hunt clubs and an abundant commercial fisheries, miles of levees were constructed

and field tiles flooded, allowing a blanket of corn and soybeans to cover the land.

One particular area caught his eye, as will in the leveed area an active coal mining operation developed.

Passing the miles and days driving Route 26, an idea began to form. Consulting with George Arthur, a waterfowl biologist with the then Department of Conservation, and Gene Filer, the agency's supervisor of land reclamation, the trio approached Director Bill Lodge with an idea—restore the mined land to a fish and wildlife area.

"The communities of Peoria and Pekin

were growing steadily," Belrose explained in January. "Birds leaders accepted the fact that this proposal would be good for wildlife and provide a valuable, nearby recreational area for citizens."

Mined from 1959 to 1974 by United Electric Coal Company (now Freeman United Coal Mining Company), purchase of the Fulton County property that became Banner Marsh State Fish and Wildlife Area began in 1978.

"There were no, or very limited, reclamation laws in place prior to the mid 1970s," explained Dean Spindler, soil scientist with the Department of Natural

MINED LAND RECLAMATION

- **Pre-Law (1866 - 1962)**
 - **Forestry**
 - **Wildlife**
 - **Recreation**

- **Post-Law (>1962, 1977)**
 - **Agriculture**
 - **Pasture**
 - **Row crop**
 - **Forestry**
 - **Wildlife**

REFORESTATION

- **Pre-Law “Opportunities”**
 - **Soil Structure**
 - **Moisture**



- **Post-Law “Challenges”**
 - **Compaction**
 - **Competition**
 - **Disincentives**



RECLAMATION STANDARDS

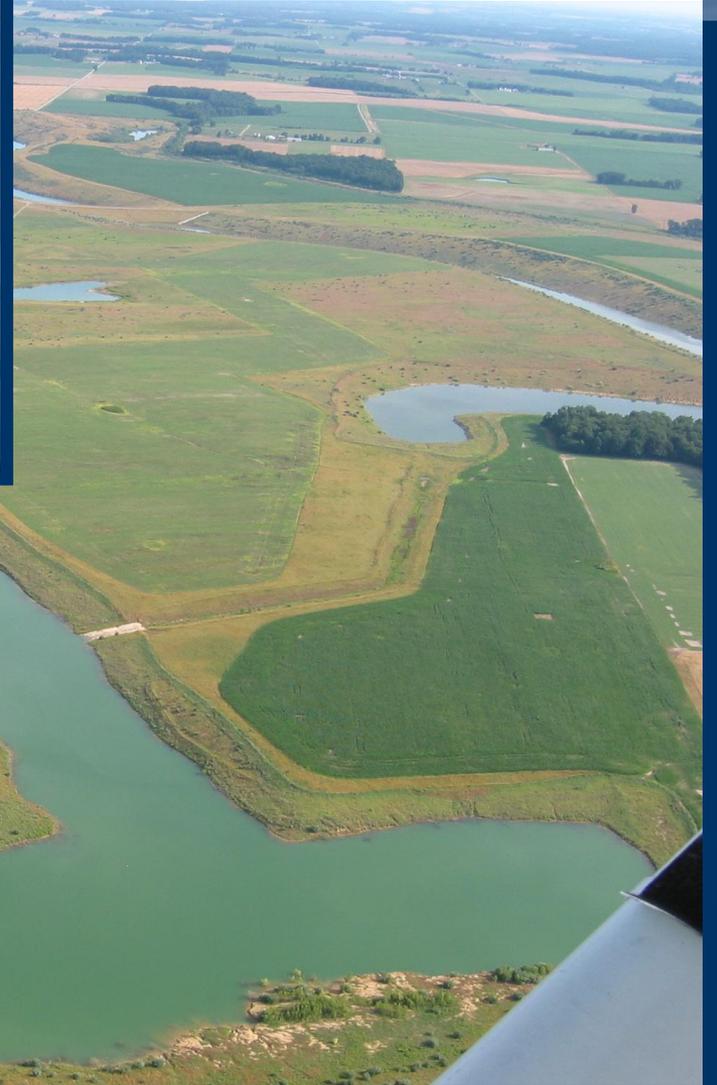
- **Grading**
 - **Strike-Off**
 - **Original Contour**



RECLAMATION STANDARDS: Wildlife - Wetlands

- **Pre-Law**
 - **Unplanned**
 - **“By-Products”**
- **Post-Law**
 - **Plans**
 - **Public Input**
 - **Review and Approval**





WETLAND WILDLIFE PLANNING









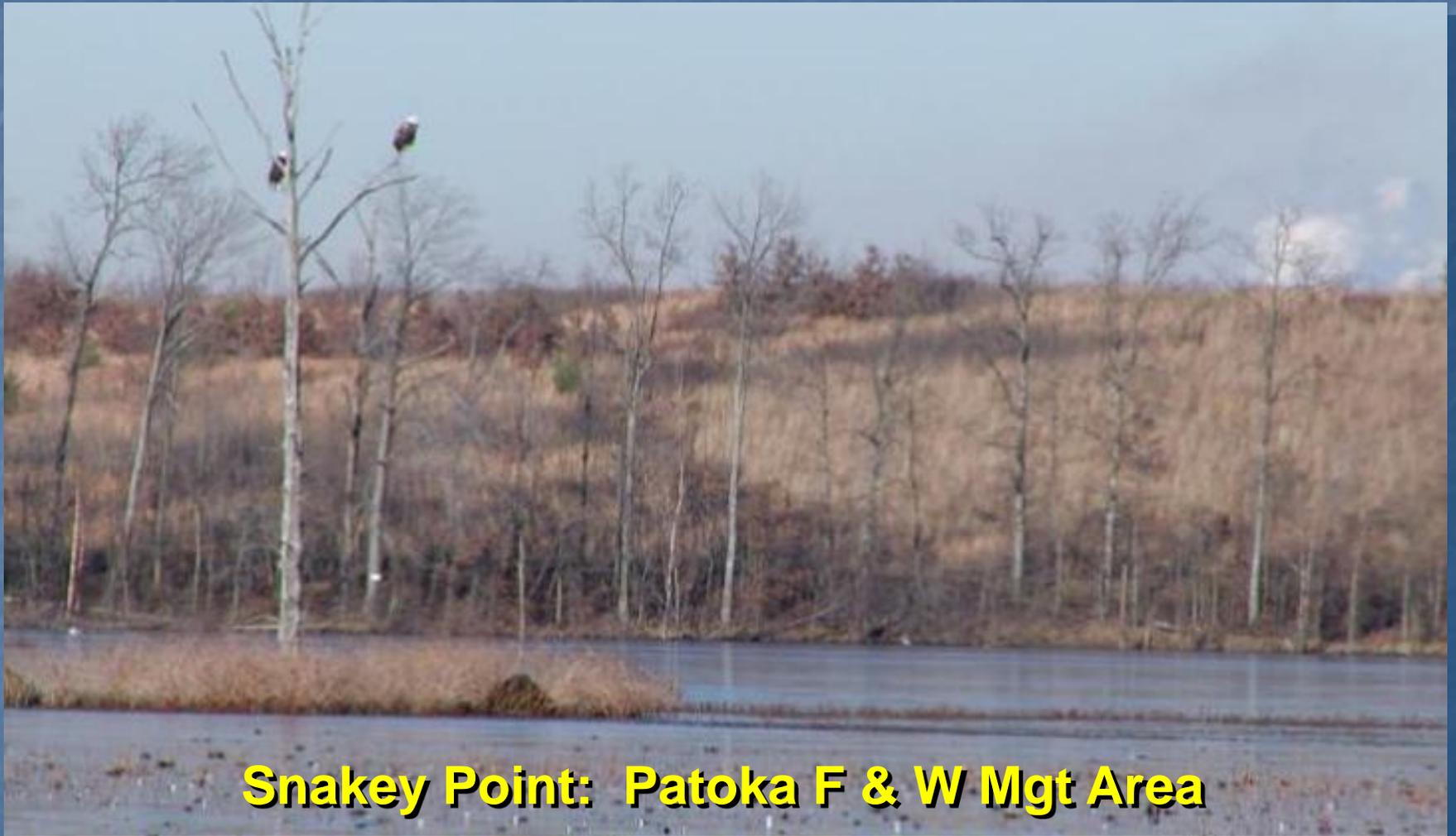
Stream Restoration

An aerial photograph showing a landscape with a stream restoration project. The foreground and middle ground feature a meandering stream with a natural, vegetated riparian forest along its banks. In the background, a straight, channelized stream flows through a flat, agricultural landscape under a blue sky with scattered white clouds.

- **Pre-Law**
 - **Channelization**
 - **Diversion**
- **Post-Law**
 - **Restoration**
 - **Riffle/Pool**
 - **Meanders**
 - **Riparian Forest**







Snakey Point: Patoka F & W Mgt Area



Deer Ridge - Indiana

WILDLIFE HABITAT: Values

- **Diverse Habitat**

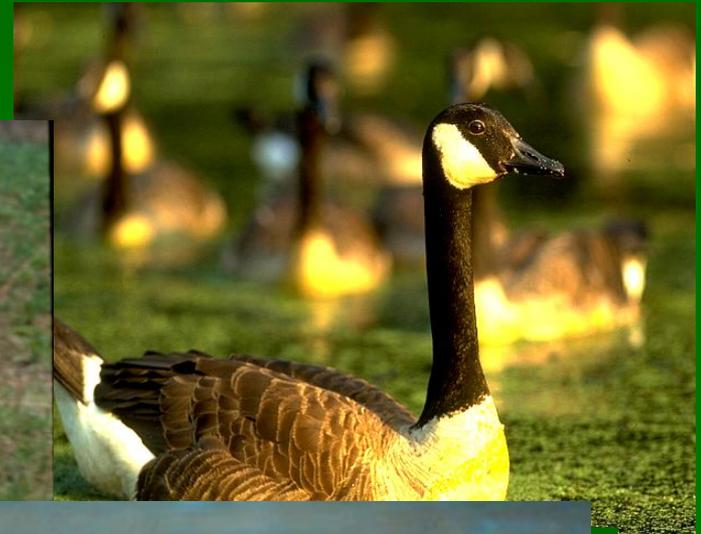
- **River Otter**
- **Beaver**
- **Bobcat**
- **White-Tailed Deer**
- **Elk**
- **Bear**
- **Turkey**



WILDLIFE HABITAT: Values

- **Unique Species – Avian**

- **Bald Eagle**
- **Osprey**
- **Least Bittern**
- **Trumpeter Swan**
- **Canada Goose**
- **Short-eared Owl**
- **Whooping Crane**
- **Henslow's Sparrow**



“UNIQUE” HABITAT:



“UNIQUE GRASSLAND ECOSYSTEMS”

Anthropogenic Influences
GRASSLAND BIRD HABITAT IN RECLAIMED MINES

JACK R. NAWROT



Grassland vegetation and bird abundances on reclaimed midwestern coal mines

Peter E. Scott, Travis L. DeVault, Robb A. Bajema, and Steven L. Lima

Abstract Reclamation of surface coal mines in the midwestern United States has produced large grasslands, which support both obligate and characterize vegetation and determine whet ed to vegetation as they do in other kinds of characteristics on 9 Indiana mine grasslands and re arundinacea) and smooth brome (*Bromus i* presence of 6 common bird species. Eur decades earlier, comprised 64% of canopy c cover by native invaders such as goldenrod reclamation. Despite a superficial appeara ed sufficiently to affect local abundance and were correlated with at least 1 t reus) were negatively associated wit radowlarks (*Sturnella magna*) an negatively associated with veg e of dickcissels (*Spiza ame* yellowthroat abundance density. Occurrence of ed with 5 variable and yellowthroats areas Henslow's former. Thus, grasses ove al natur hat d

J. Field Ornithol. 73(3):268-275, 2002

Breeding bird communities of reclaimed coal-mine grasslands in the American midwest

Travis L. DeVault,¹ Peter E. Scott,² Robb A. Bajema,³ and Steven L. Lima

Department of Life Sciences, Indiana State University, Terre Haute, Indiana 47809 USA

Received 15 February 2001; accepted 24 August 2001.

JACK R. NAWROT

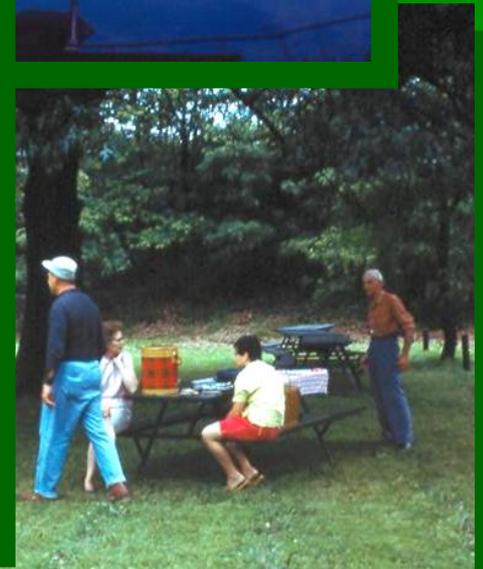
ABSTRACT. We studied the breeding bird communities of 19 reclaimed surface coal mines in western Indiana in 1997-1998, using roadside point counts and off-road transect point counts with grass species, they supported diverse bird communities in which 590 species of birds were recorded on roadside and off-road counts were recorded. Meadowlarks (*Sturnella magna*) and Yellowthroats were the most abundant species.

RECREATION OPPORTUNITIES

- **Pre-Law**
 - **Undeveloped**
 - **Private Clubs**
 - **Industry - Free Access**



- **Post-Law**
 - **Private Development**
 - **Commercial**
 - **Limited Access**
 - **State Acquisition**



New Sparta-based facility will provide an economic, employment and recreation boost to Illinois.

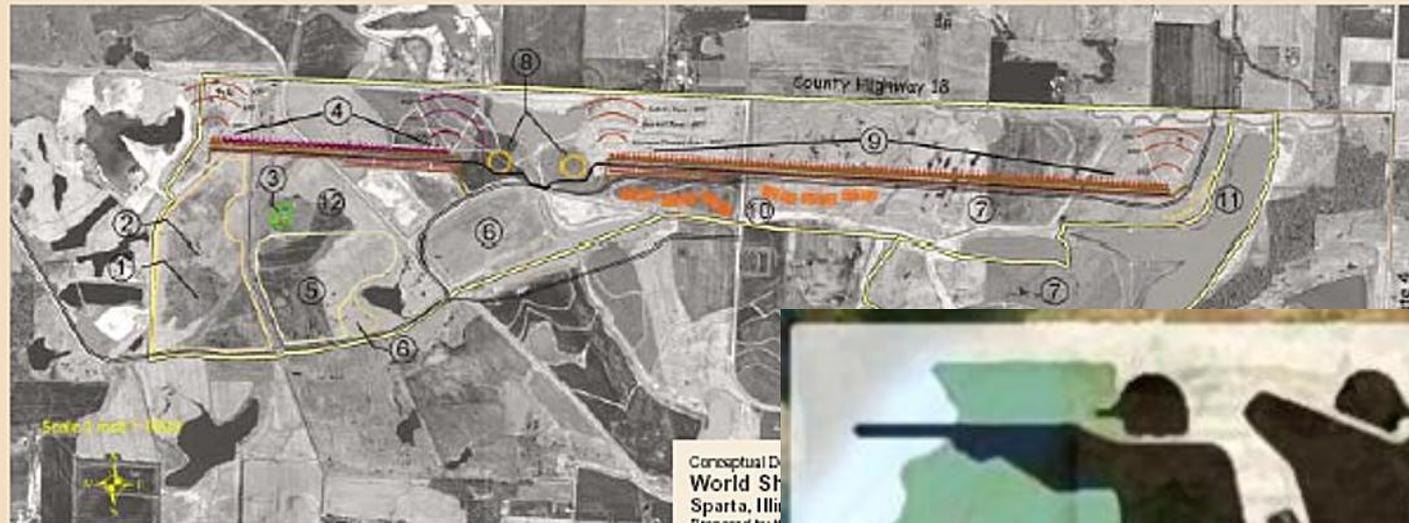
A World-Class Opportunity for Illinois



structures will include a multi-use recreation center and a building to house exhibitors, vendors, concessions and restrooms.

For the first time ever, the Illinois state park system will have a site capable of hosting large numbers of campers. Under the initial development phase, 600 full-service RV campsites will be constructed, with adequate space existing to expand with several hundred additional spaces. Additional tent campsites will be developed around a large lake. Construction of cabins similar to those found in other state parks is also under consideration.

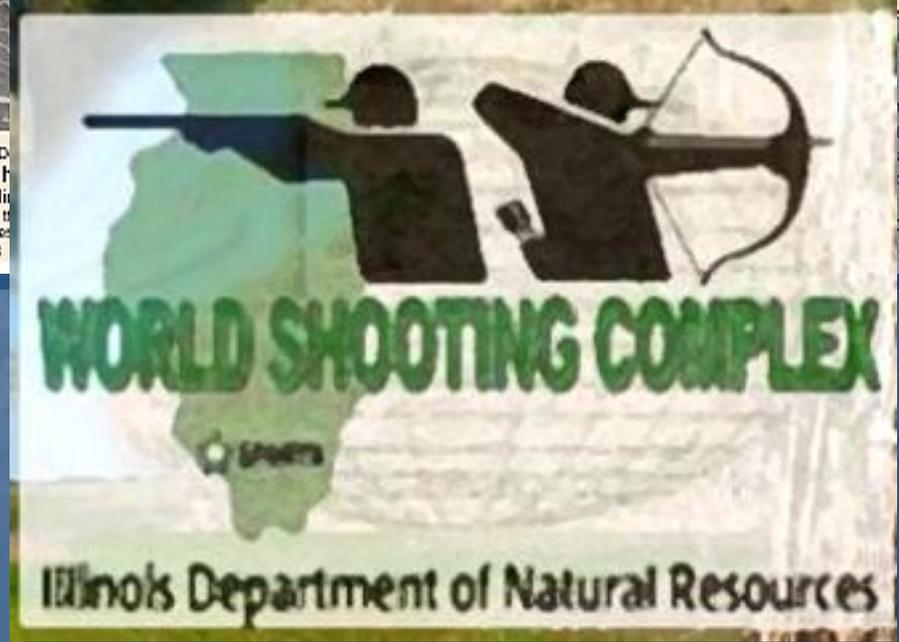
While the CNR is coordinating development of the project and will ultimately manage the facility, a project of this size cannot be accomplished without partners. The Illinois National Guard has graciously exchanged a parcel of land to allow the contiguous site and maintenance Department to construct structures and assess the site to ensure

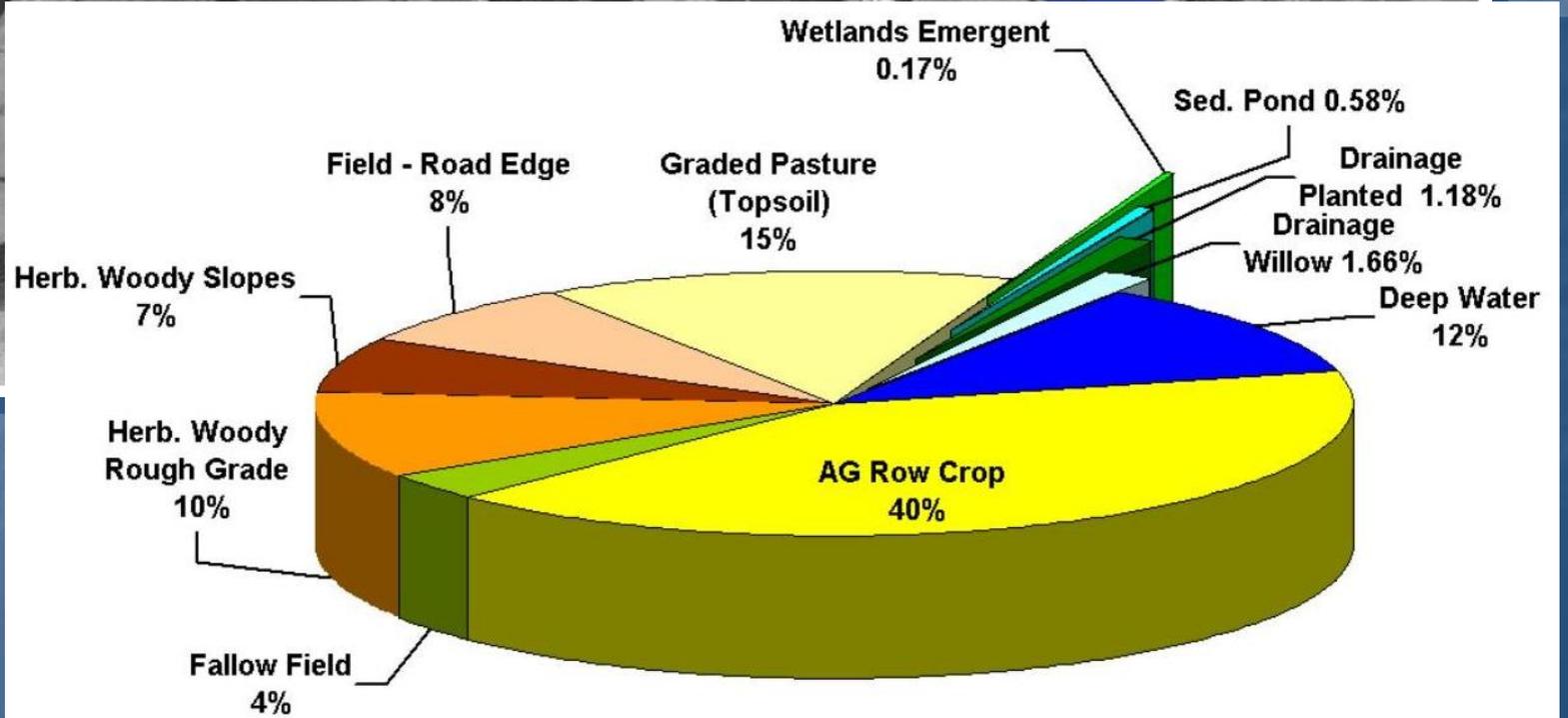
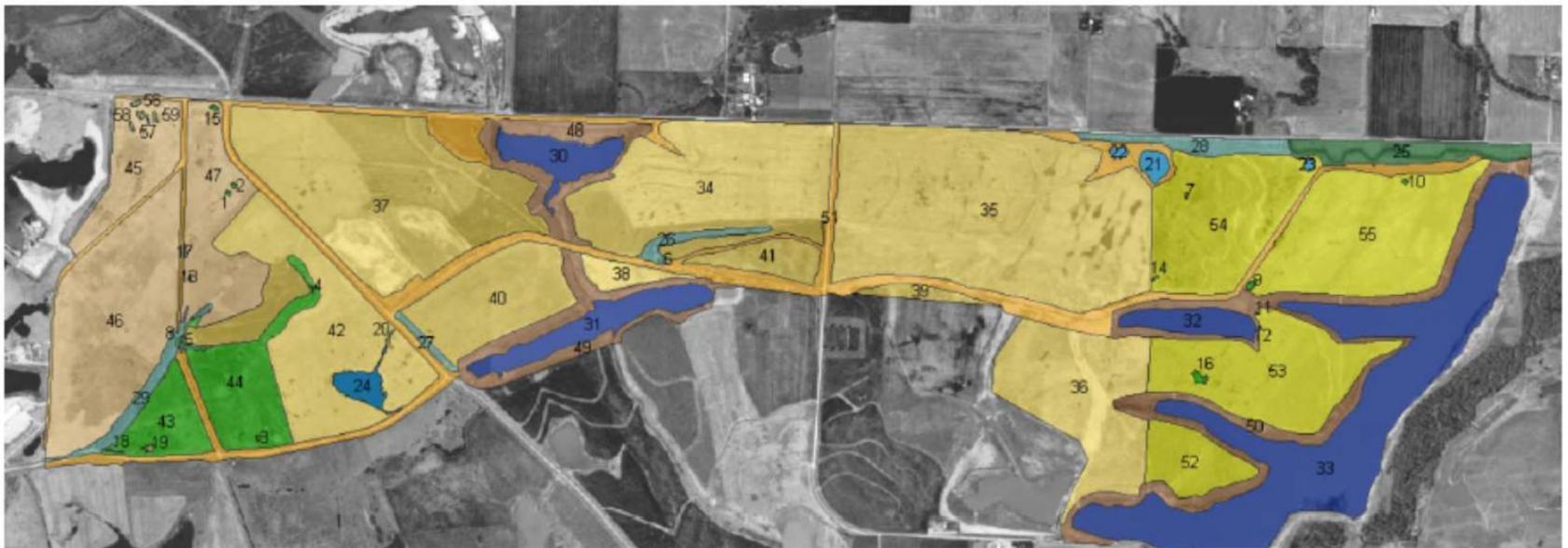


Conceptual Design of World Shooting Complex in Sparta, Illinois. Prepared by the Illinois Department of Natural Resources, August 2003.

Story By Kathy Andrews

Brunsvold and area officials broke





RECLAIMED CROPLAND CONVERSION

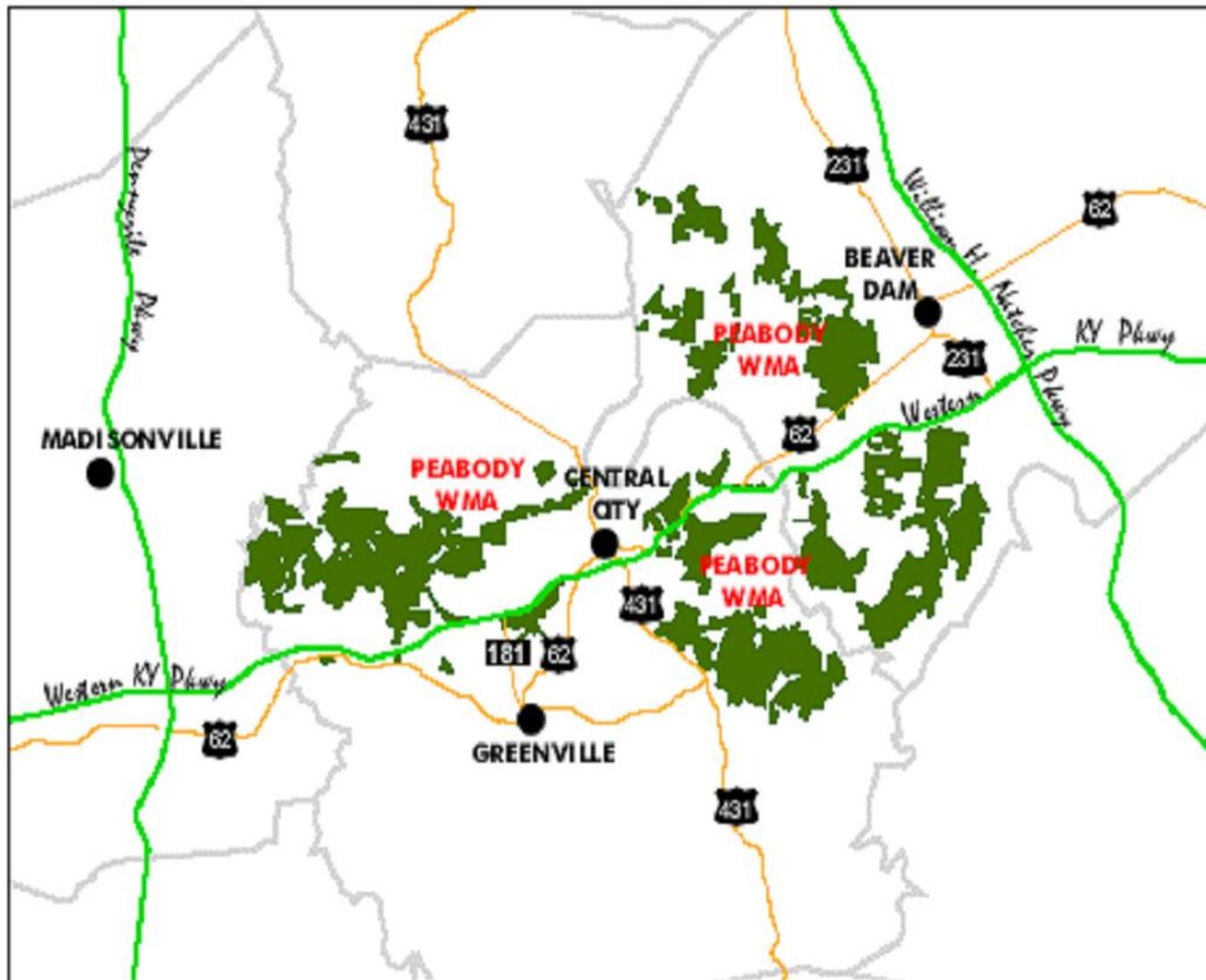
WETLAND MITIGATION



SPOILBANK CONSTRUCTION



Peabody Fish And Wildlife Management Area





**Environmental Education - Wetland Restoration
Tri -C 4th Grade 13 May 2004**

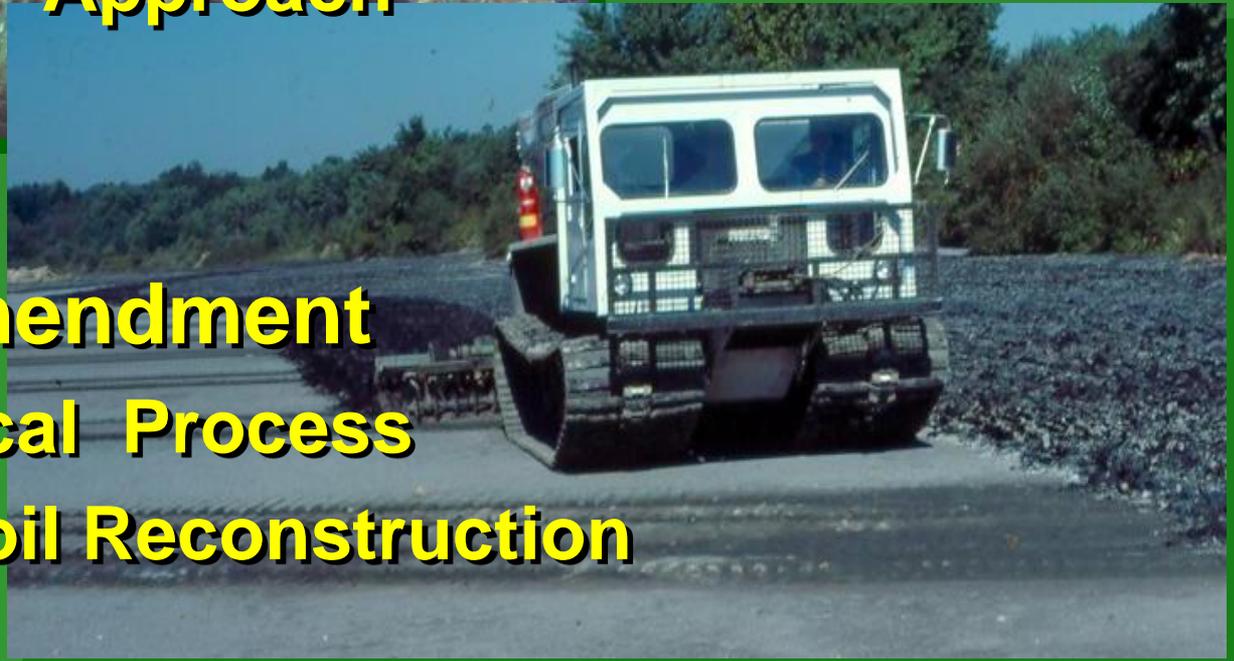
Coal Tailings

MINE WASTES
OR
MINE SOILS



- **Soil Cover**
 - “Cosmetic” Approach

- **Alkaline Amendment**
 - Geochemical Process
 - Wetland Soil Reconstruction



**AMAX - AYRSHIRE MINE
SLURRY: EXPERIMENTAL PRACTICE**



**PERMIT REQUIREMENTS
"EQUALLY EFFECTIVE" (AS 4 - FOOT)**
SOILS
VEGETATION
WATER



**ARCH OF ILLINOIS - CAPTAIN MINE
SLURRY: EXPERIMENTAL PRACTICE**











A photograph of a field of tall, golden-brown grasses, likely in a prairie or upland area. The grasses are in full bloom, with many seed heads visible. The background shows a flat horizon under a clear blue sky. The text is overlaid on the left side of the image.

Vegetative Cover - Upland

Indian grass

Big Bluestem

Switch grass

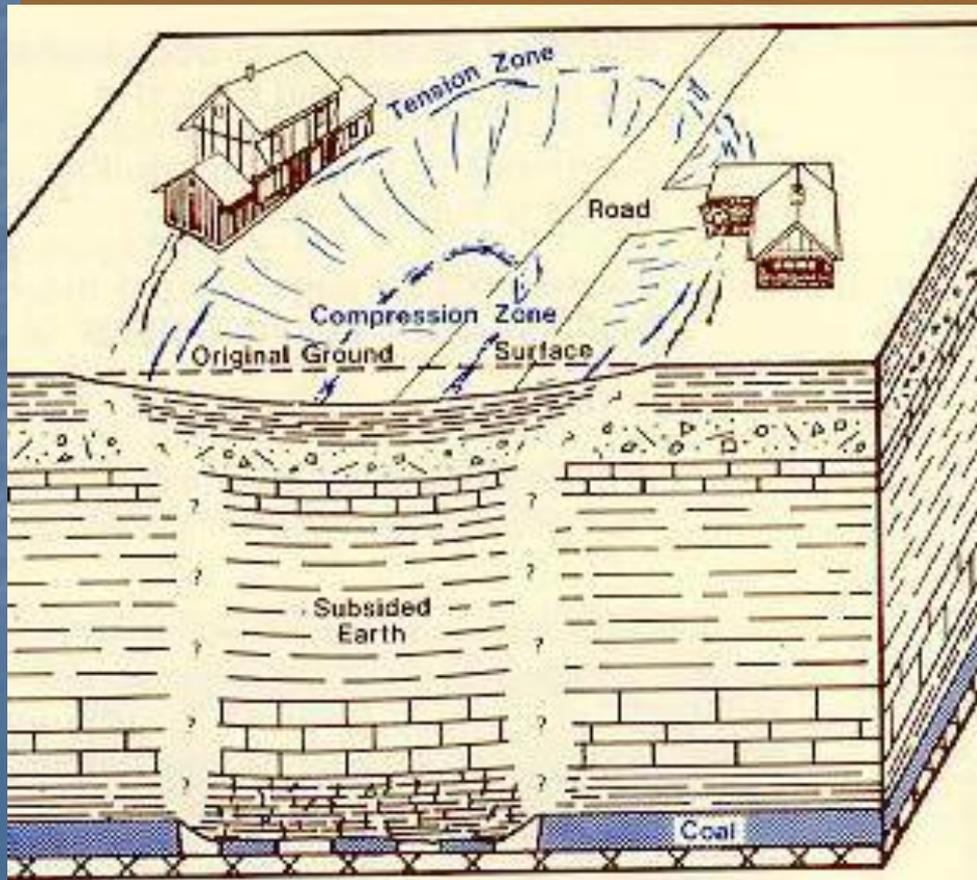
Little Bluestem



SUBSIDENCE WETLANDS:

UNIQUE OPPORTUNITIES



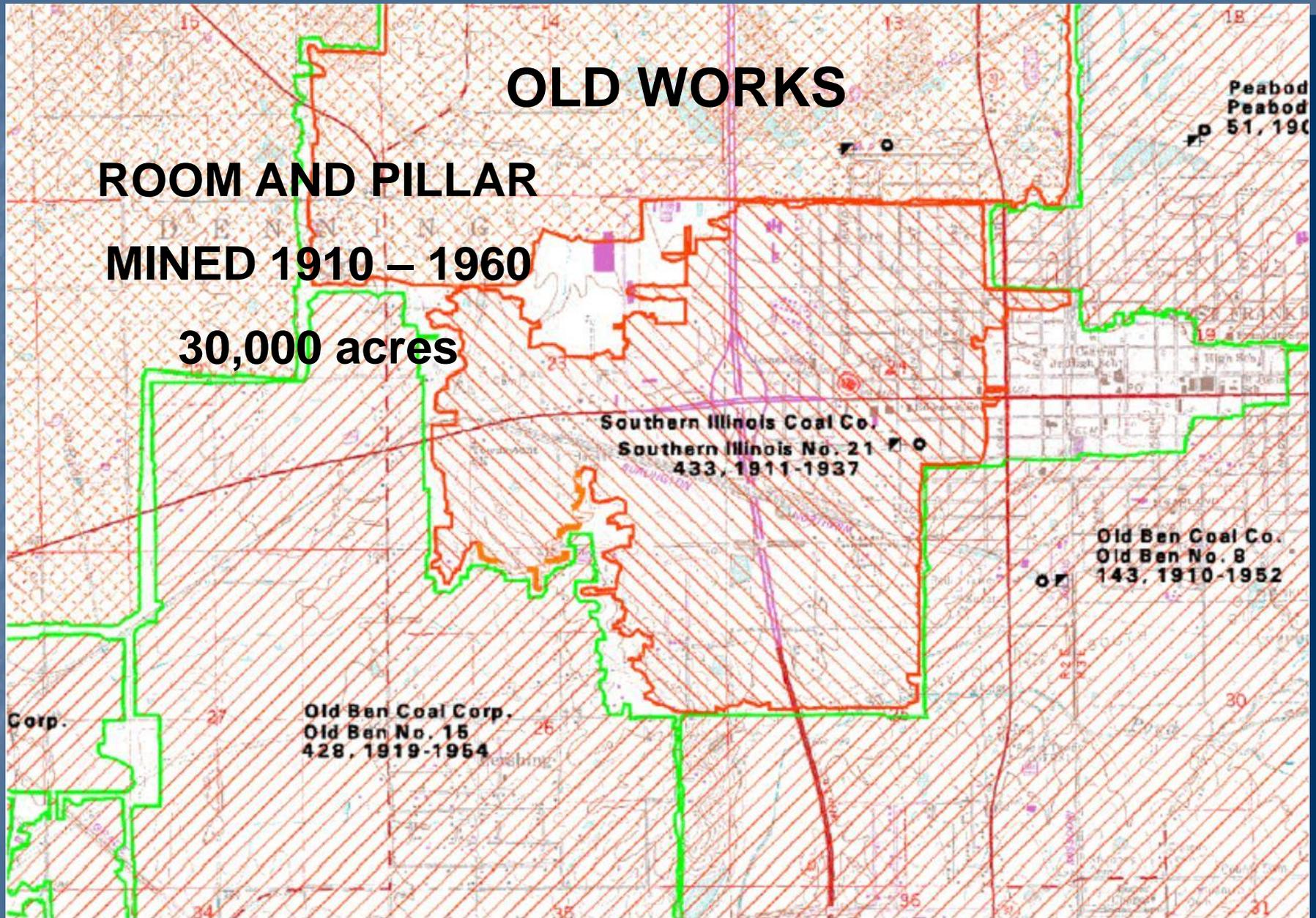


OLD WORKS

ROOM AND PILLAR

MINED 1910 – 1960

30,000 acres

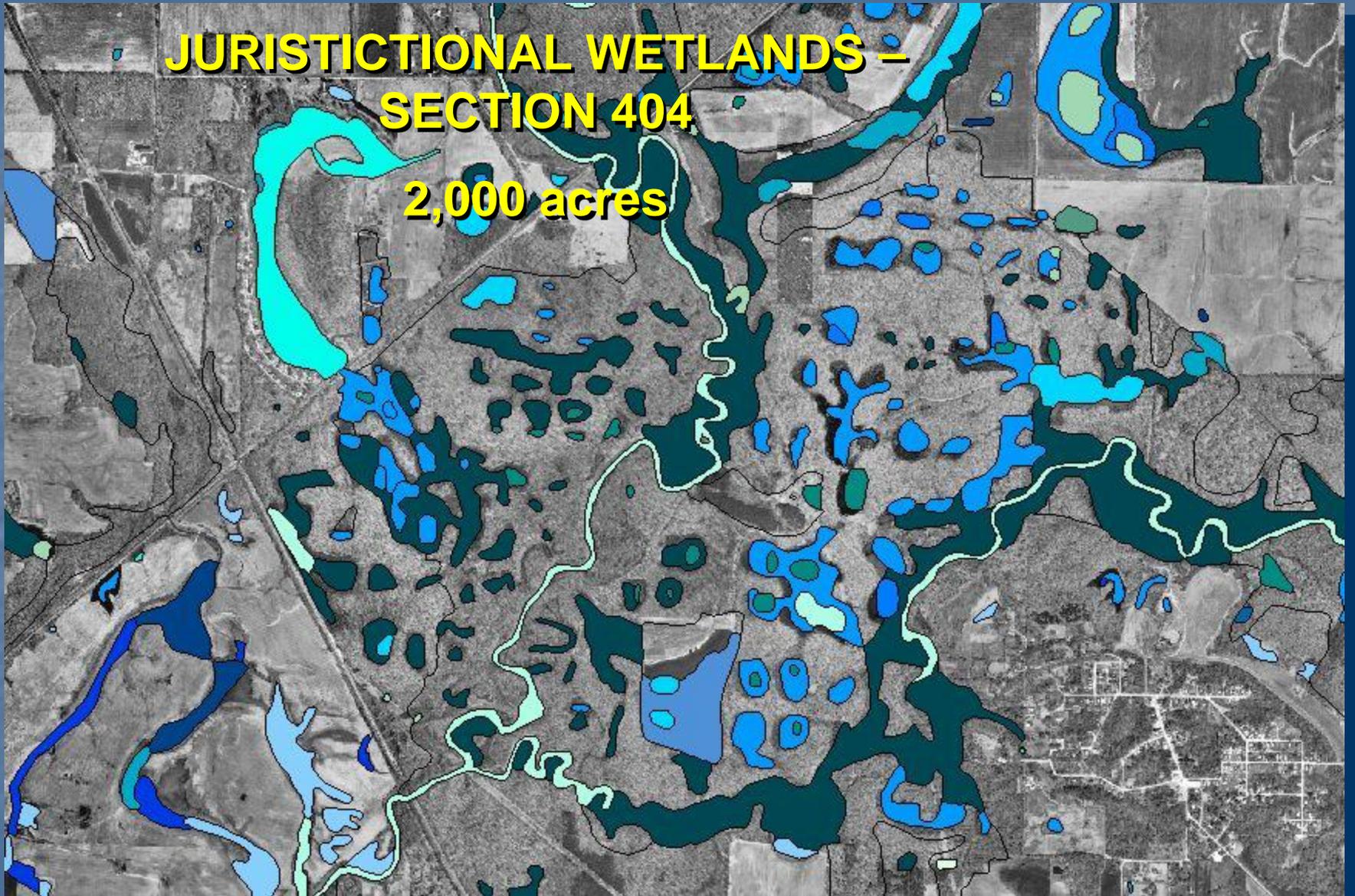


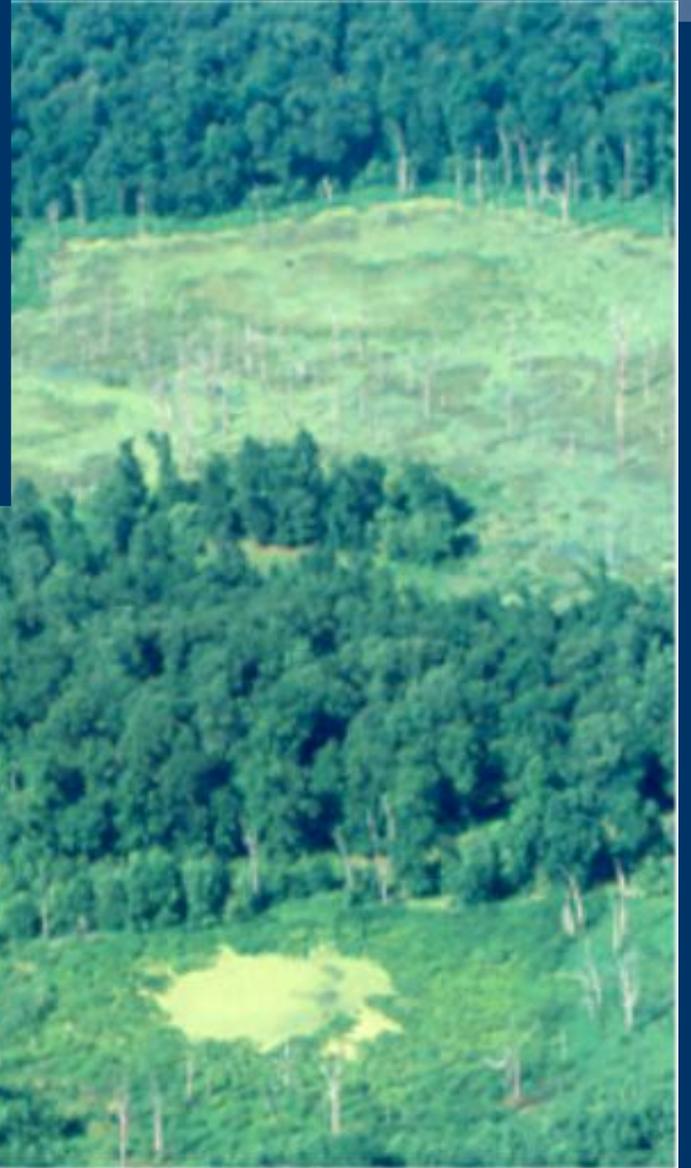
UNPLANNED SUBSIDENCE



**JURISTICTIONAL WETLANDS –
SECTION 404**

2,000 acres





FUTURE MINING

**Can't restore the functions and values....
of subsidence wetlands**

**Sahara 16
~1988**





UNPLANNED

PLANNED

PLANNED LONGWALL

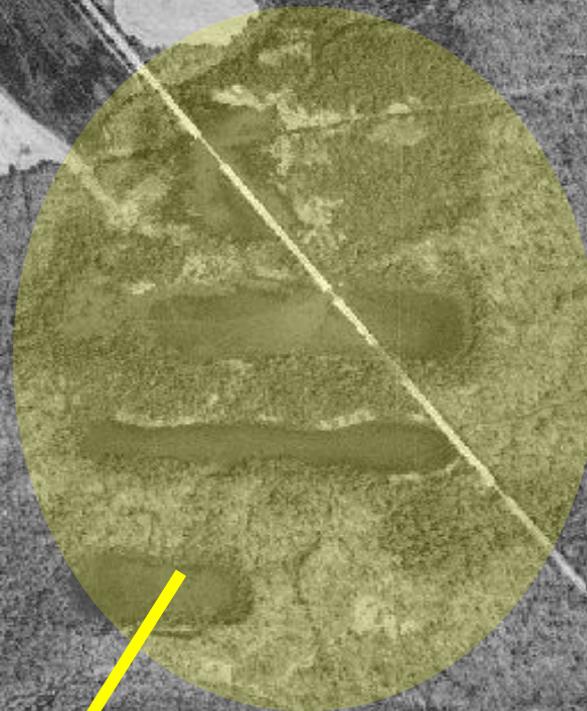
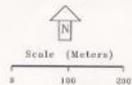
1984

540'



Legend

- Bottomland Hardwoods
- Row Crops
- Subsided Wetland
- Impoundment
- Old Field



Wetland Restoration

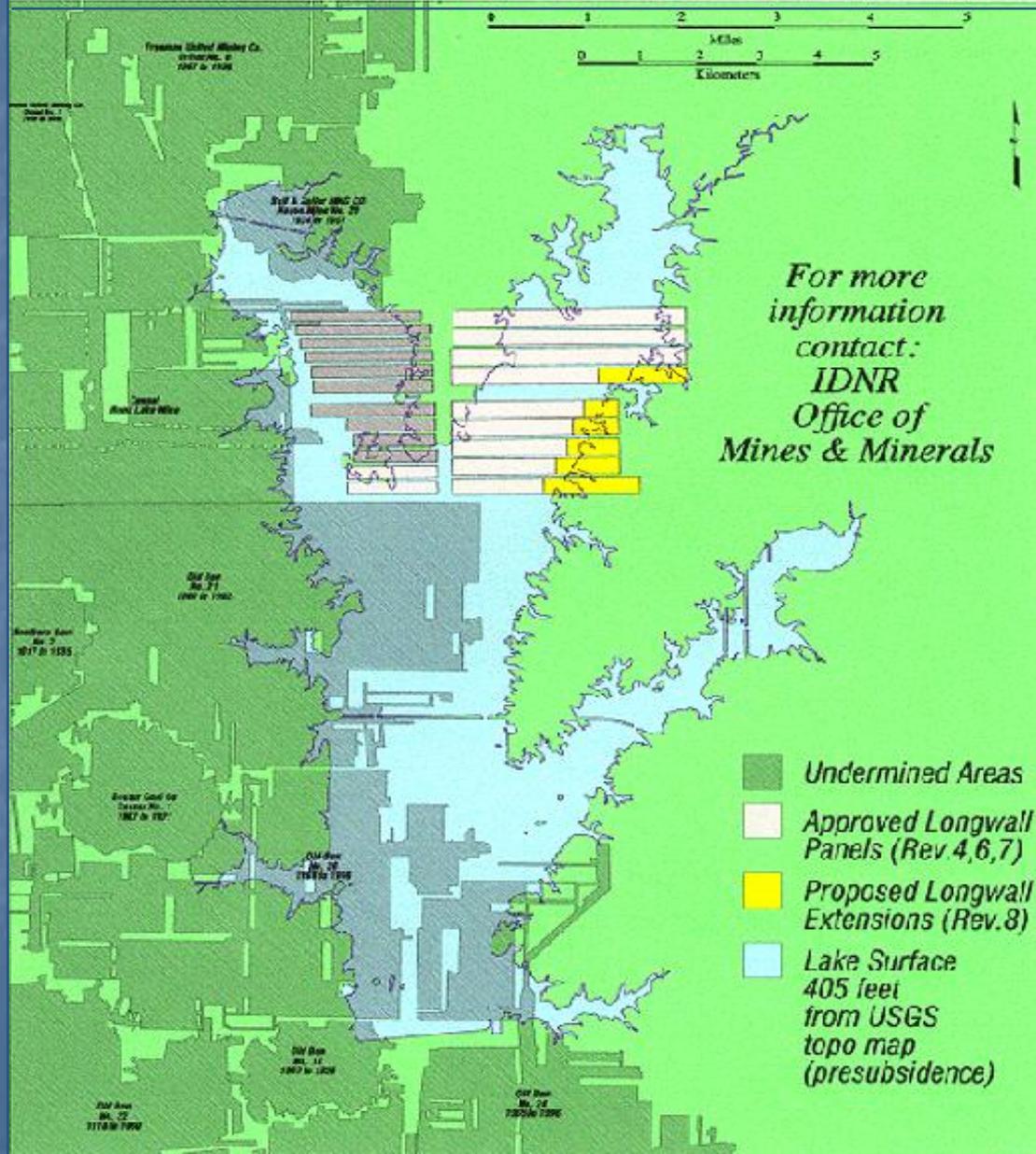


PFO1A



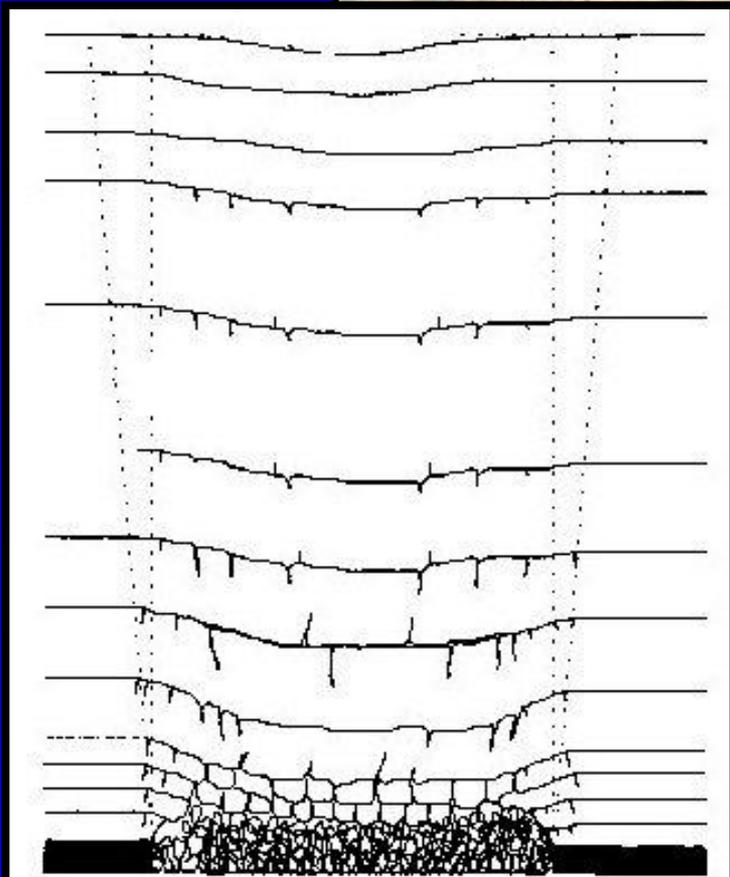


Underground Coal Mining at Rend Lake



*For more information contact:
IDNR
Office of
Mines & Minerals*

Cross Section Subsidence Panel



**Subsidence
Basins**

WARD BRANCH



SUBSIDENCE PROBLEM ?



WETLAND RECREATION ASSET ?

Birding Field Trip Scheduled

The Shawnee Audubon Society, a chapter of Illinois Audubon Society, is planning a shorebird identification field trip at Ward Branch Wetland area on Rend Lake.

Interested bird watchers are asked to meet in the back of the artisan center parking lot off exit 77 of I-57 Aug. 18 at 8 a.m.

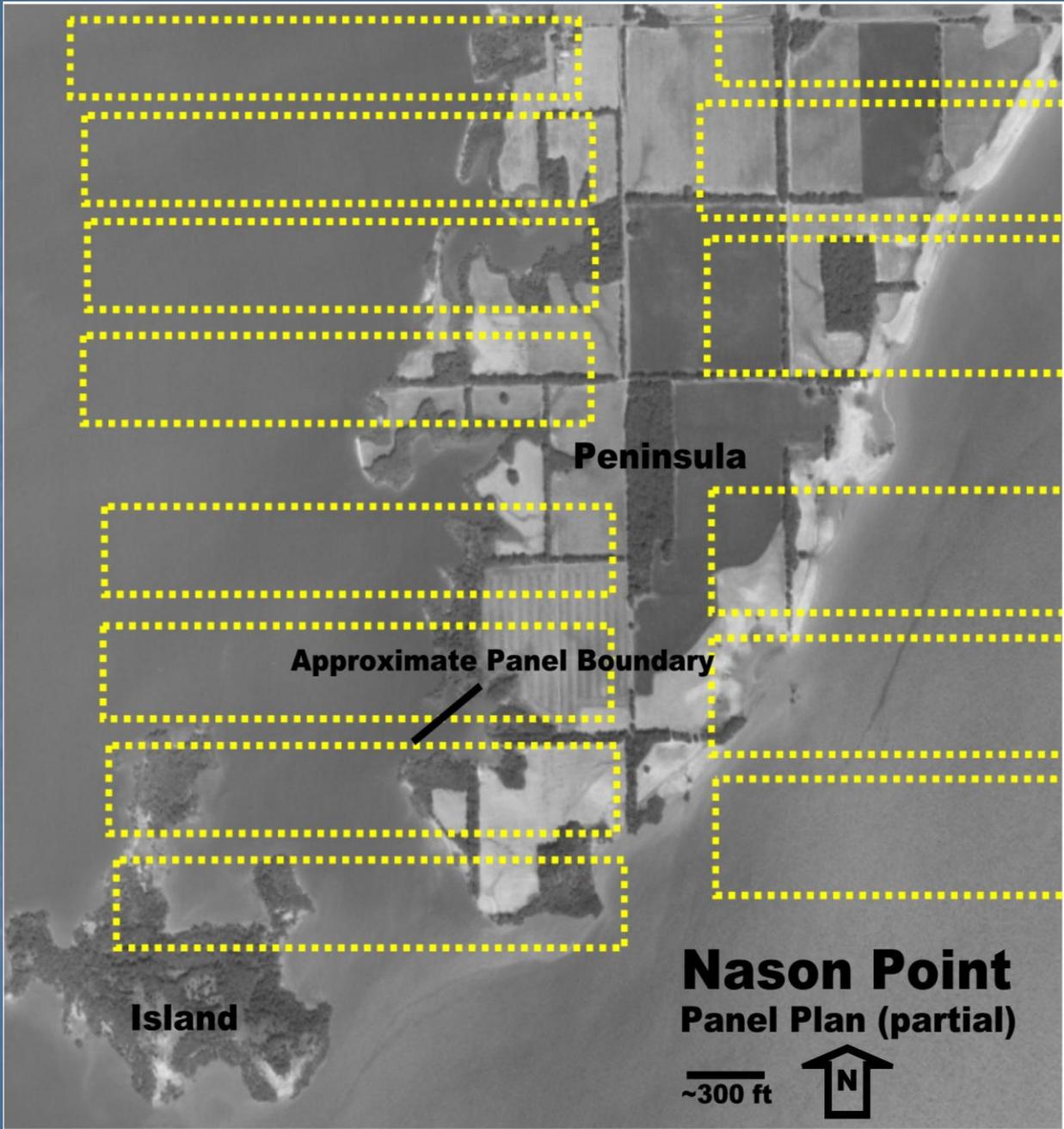
Participants are advised to dress for warm weather and a walk to the mud flats. There is no fee. Beginning birders are especially invited to attend this field trip.

Call 618-564-2079 for further information. The field trip will conclude around noon.







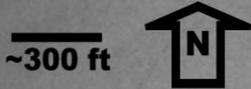


Peninsula

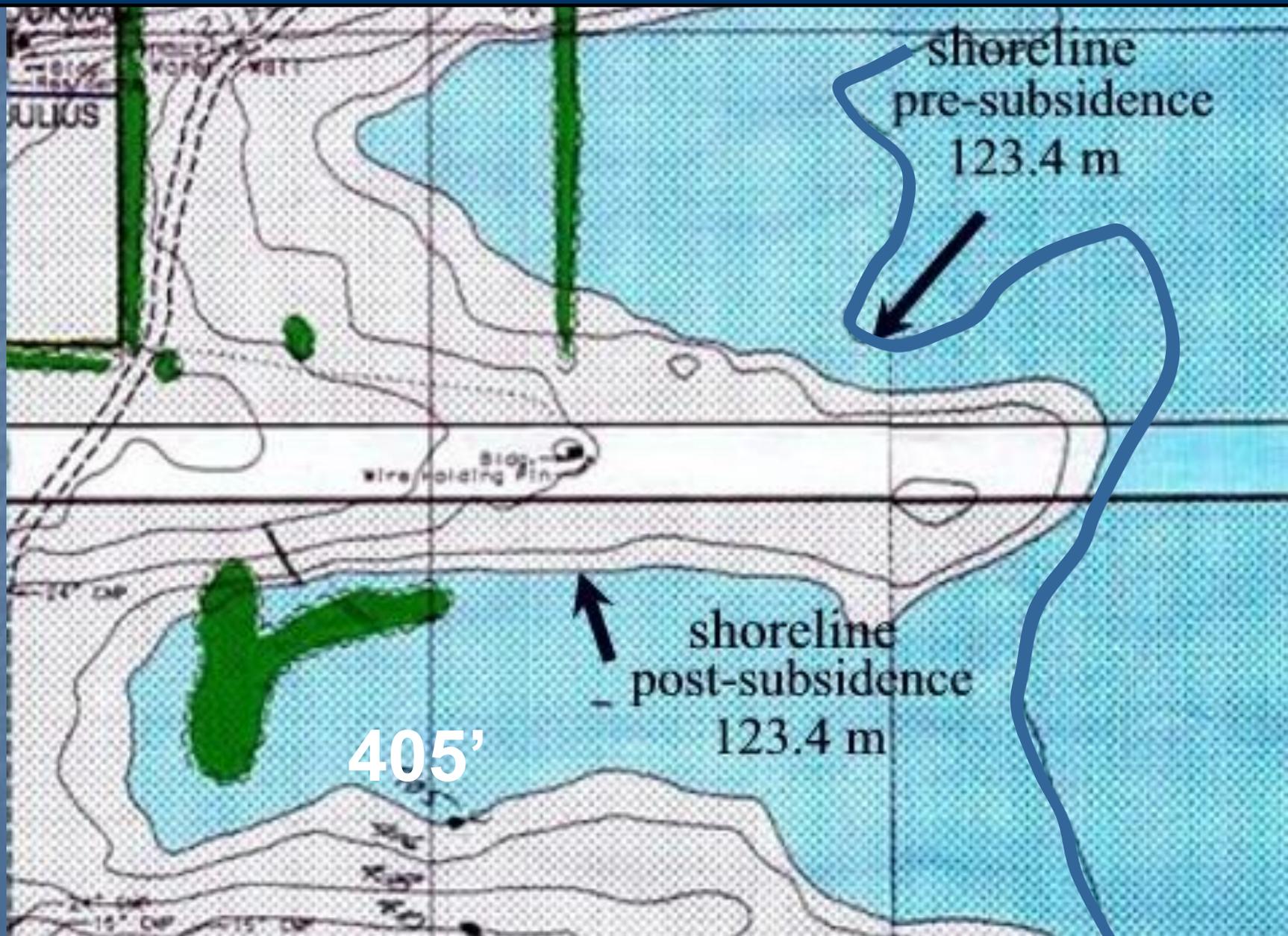
Approximate Panel Boundary

Island

**Nason Point
Panel Plan (partial)**



Nason Point: Planned Subsidence



SHORELINE DIVERSITY



WATERFOWL FOOD



PLANNED SUBSIDENCE WETLANDS

A Section 404 Mitigation Alternative ?





Potential Wetland Bank ?



LIABILITY ?

\$20,000 / ACRE ASSET





WETLAND ~~SUBSIDENCE~~ RESTORATION?

“YOU DIDN'T DO MUCH”

WETLAND ESTABLISHMENT

**EMBANKMENTS, WATER CONTROL,
DISK, SEED, MANAGE**

