

A circular inset image showing a swampy forest scene. Several cypress trees with characteristic "knees" are visible, standing in shallow water. The water is dark and reflects the surrounding green foliage and trees. The background of the entire image is a dark, dense forest of tall, thin trees.

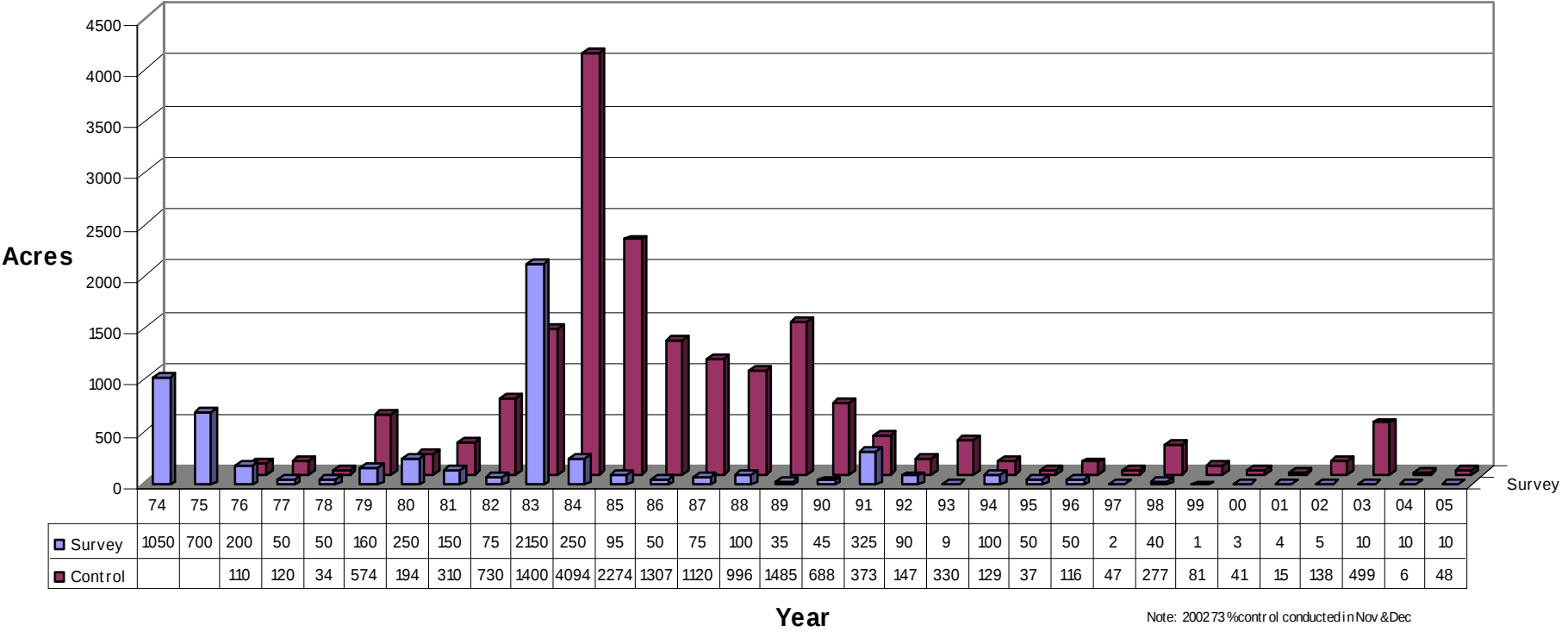
Bureau of Invasive Plant Management

Preserving the Real Florida

1984



Orange Lake Waterhyacinth History



IN ONE ACRE OF WATER HYACINTH

- More than 655,000 plants
- 50-200 tons wet weight
- 60-70% Leaf turnover per month
- 17.1 million leaves deposited per year
- 180-840 tons of sediments per year (wet)
- 4.5 tons of sediments per year (dry)-- up to 4 inches of sediment on bottom

Waterhyacinth Coverage & Dissolved Oxygen

% Area Covered	Avg. DO mg/L
0	10.3
5	9.3
25	4.0
50	1.6
100	1.3

Anoxic conditions (<2ppm) can result in release of additional phosphorus from sediments over aerobic conditions.

Range: Aerobic: -6.5 to 1.3 lbs./acre/year

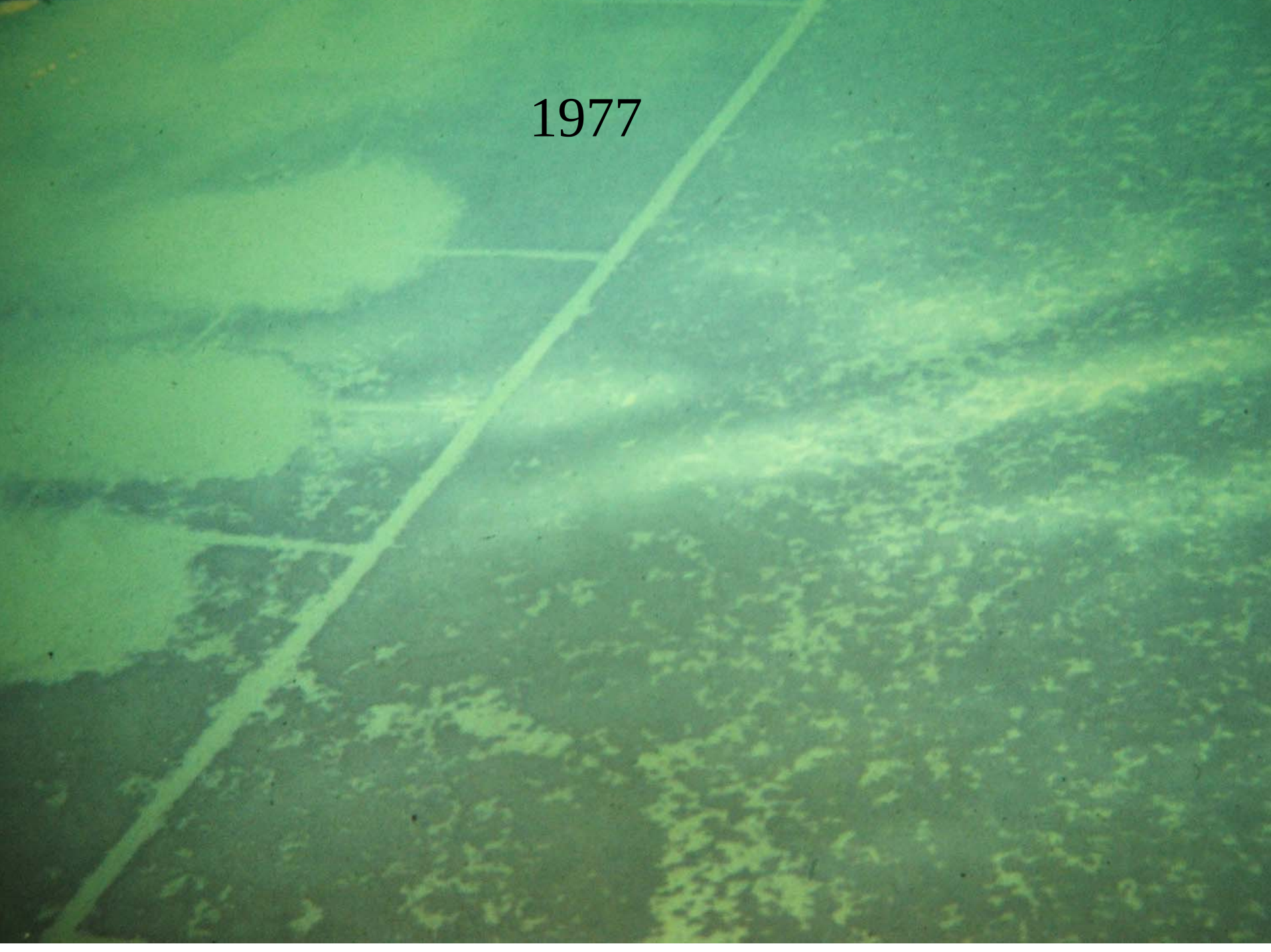
Anaerobic: 29.3 to 87 lbs./acre/year

Orange Lake Oxygen Levels January 9, 2006

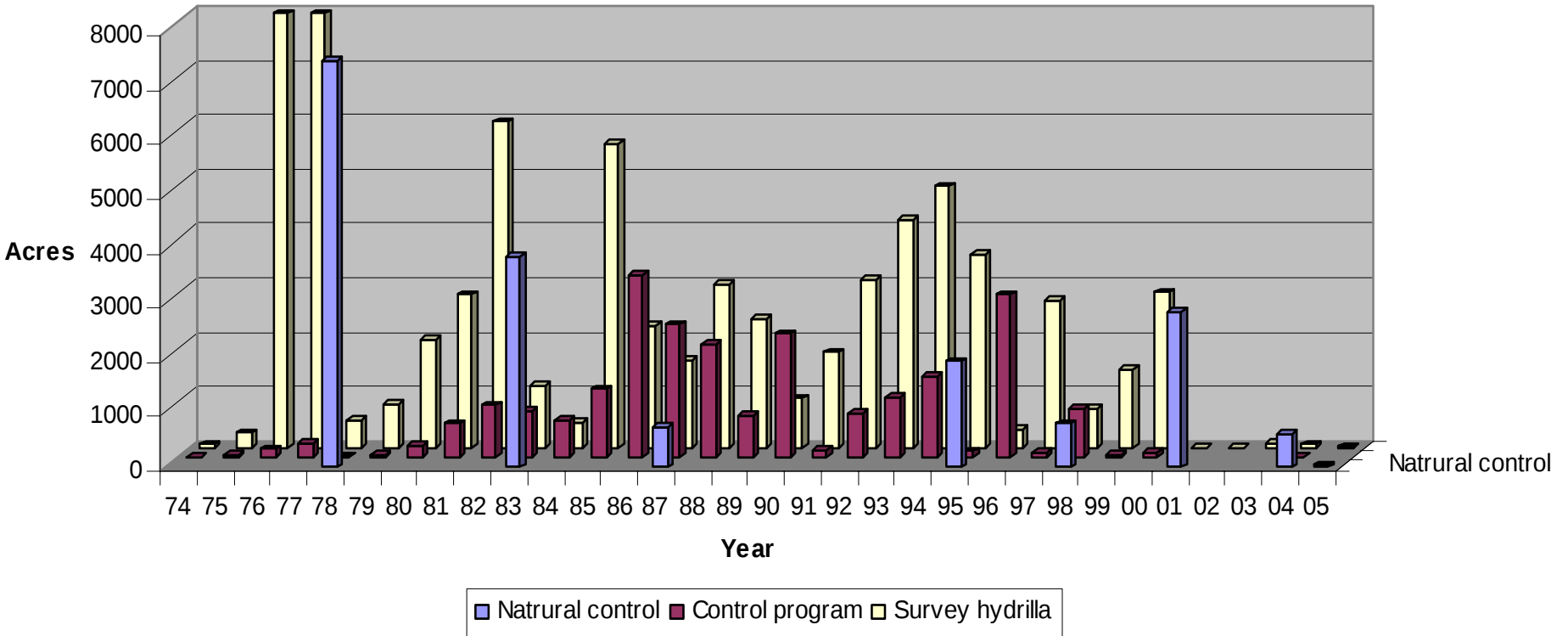
Readings taken between 1-3 pm

Location	Depth	Oxygen ppm	Depth	Oxygen ppm
River Styx Bridge	Surface	2	3	1.8
North End Trail 20 foot wide near river Styx	Surface	2.6	2	2.6
Hwy 301 bridge	Surface	2.8	6	2.6
North end-cattail/Sag/sawgrass mix	Surface	3.4		
North End Trail 30 foot wide	Surface	3.8		
pennywort-frogsbit mat	Surface	4.4	under mat	2
P-G Run pickerel weed	Surface	4.6	2	2.8
Nuphar west arm	Surface	4.8	6	4
PG Run trail 20' wide	Surface	5		
P-G Run Large open area 2	Surface	5.8	6	6.6
P-G Run 50 foot wide trail	Surface	6	6	5.6
Open water west arm	Surface	6.4	6	6.4
P-G Run Large open area 1	Surface	6.6	6	5.8
South end mid lake	Surface	8.2	6	7.4
Mix smartweed/coontail (20%)	Surface	10.2	6	3.2
North end mid lake	Surface	10.4	6	8.4

1977



Orange Lake Hydrilla Control



Hydrilla & Phosphorus

- Control operations can result in release of 8 pounds/acre.
- Natural lost of leaves from living plants can result in release of 2 pounds/acre/year.
- Live plants can extract 2.7 pounds/acre/year from bottom sediments

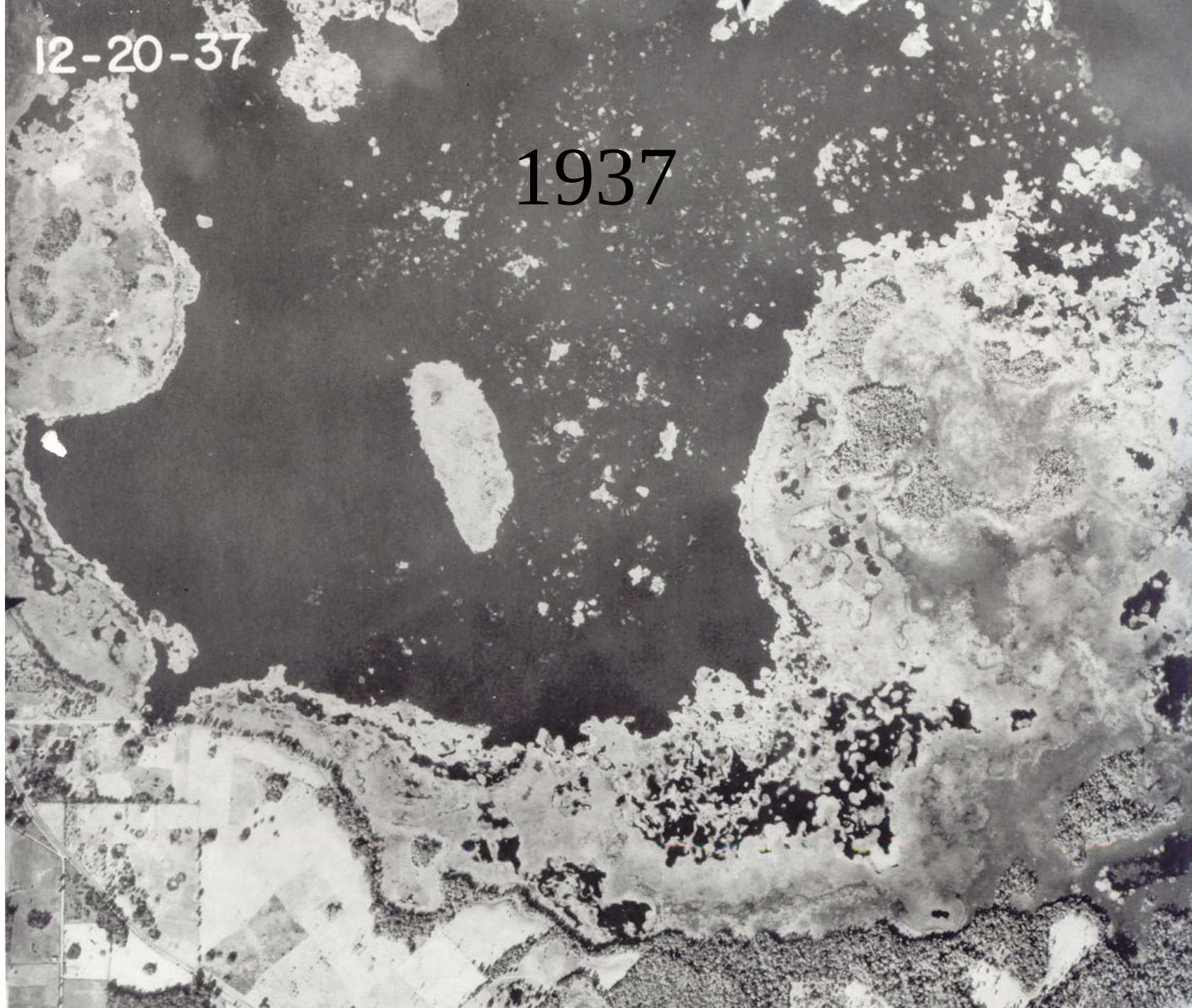




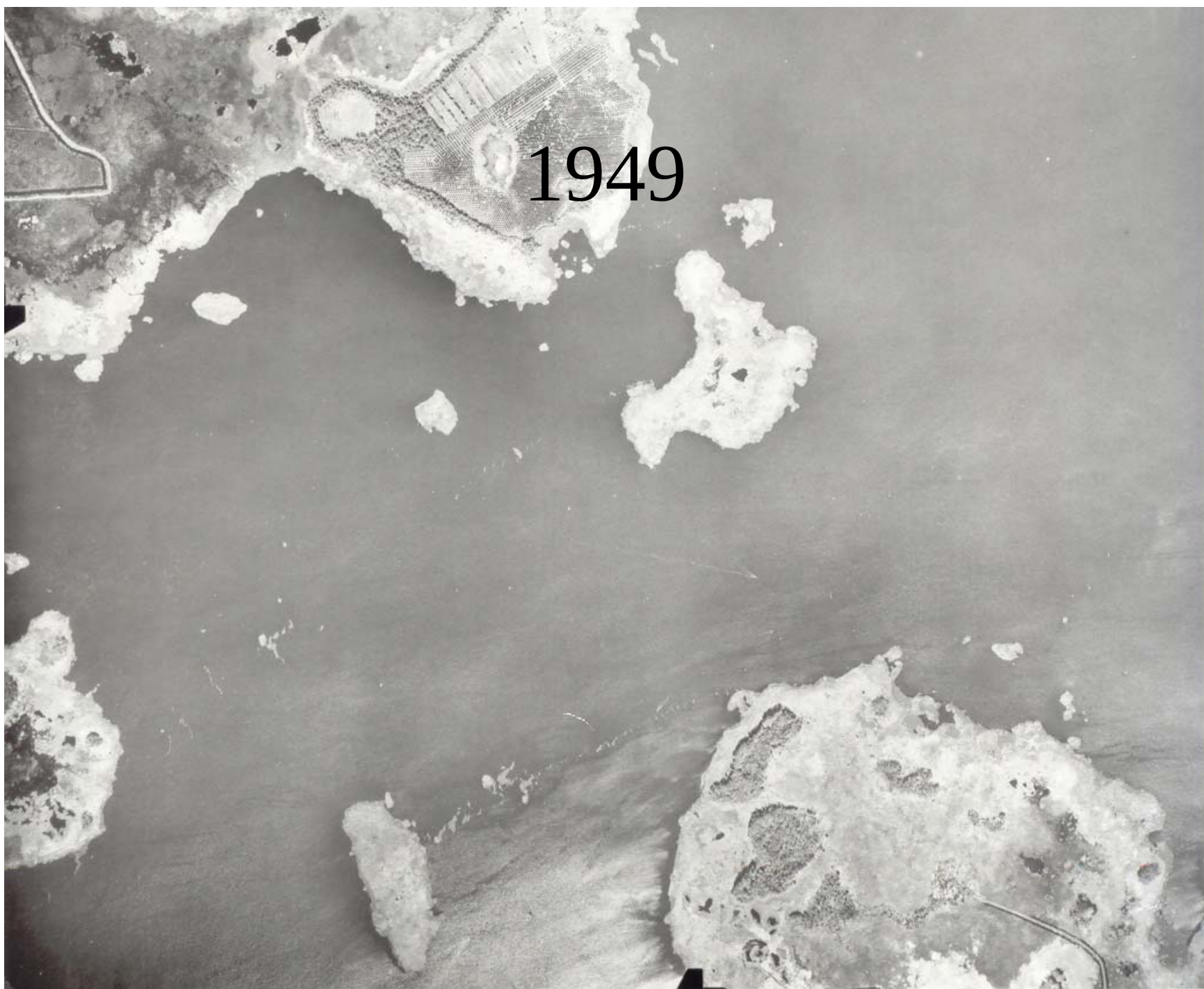


12-20-37

1937



1949



1956



1-11-61

17-10

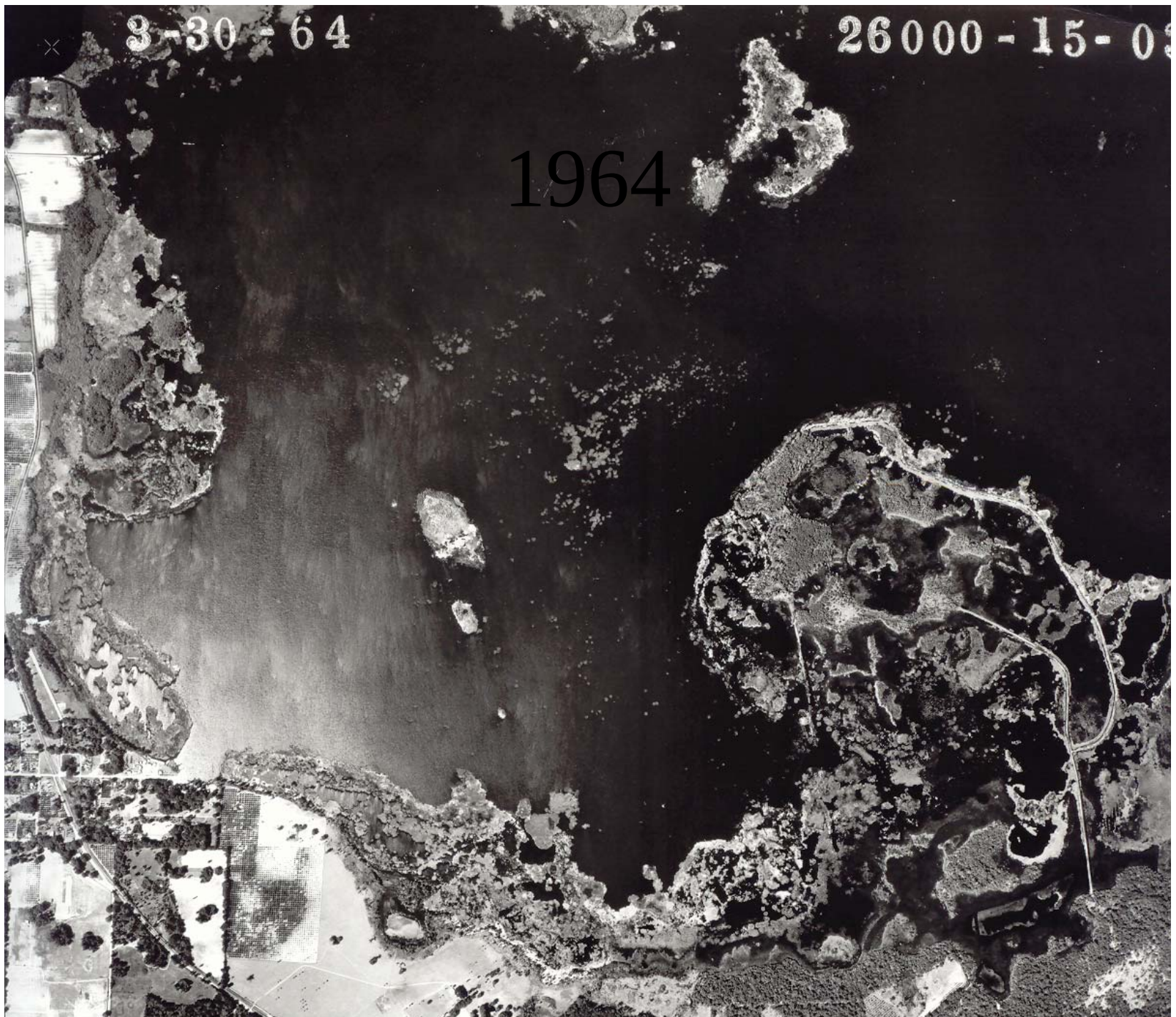
1961



3-30-64

26000-15-03

1964





1975

PD 1644-14-



1979



1980



1982

FD 302-14-02

1988

An aerial photograph showing a large body of water, possibly a bay or estuary, with a dark, textured surface. The surrounding land is light-colored and shows signs of development, including roads and buildings. The year '1988' is printed in the center of the image. The text 'FD 302-14-02' is visible at the top edge.

1989

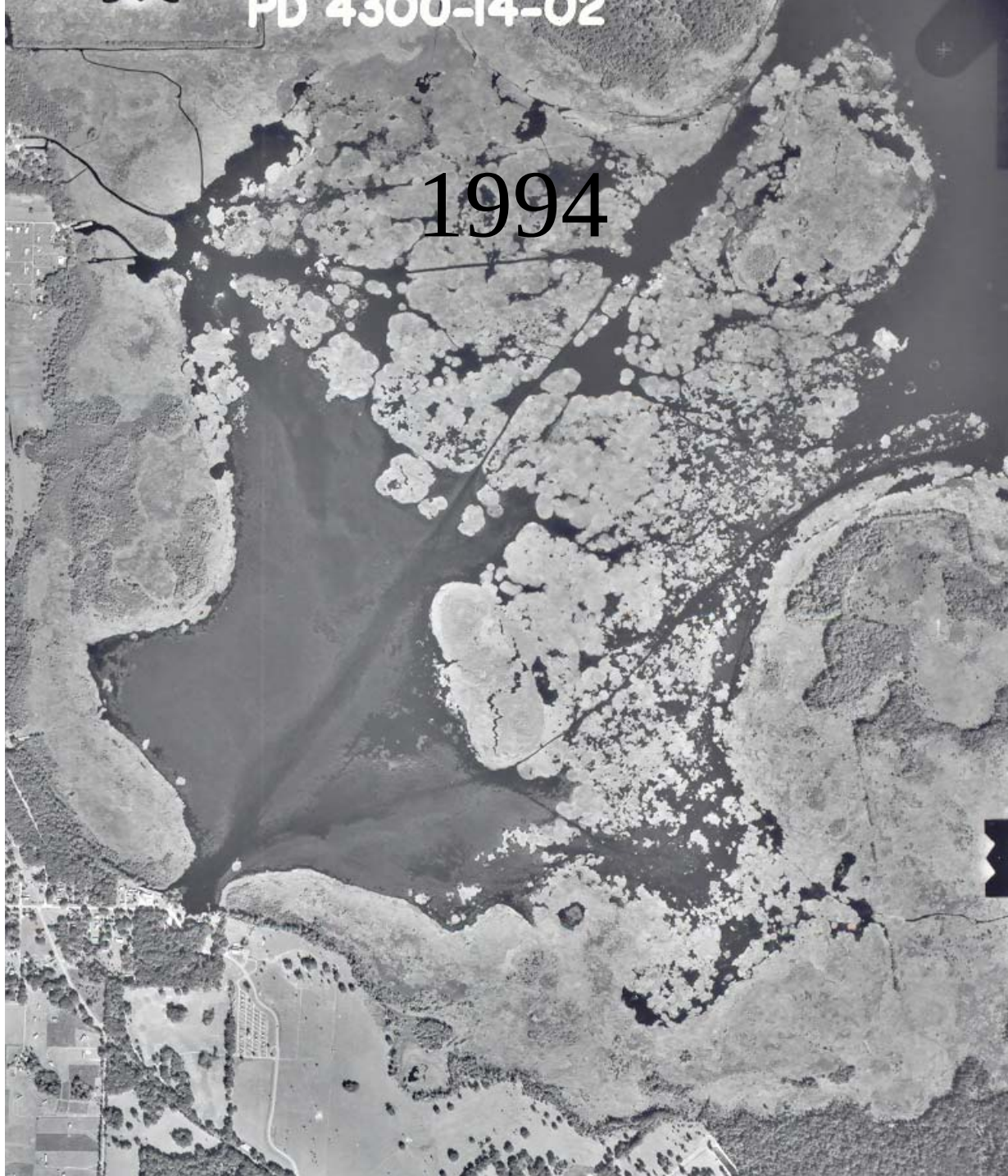


1990

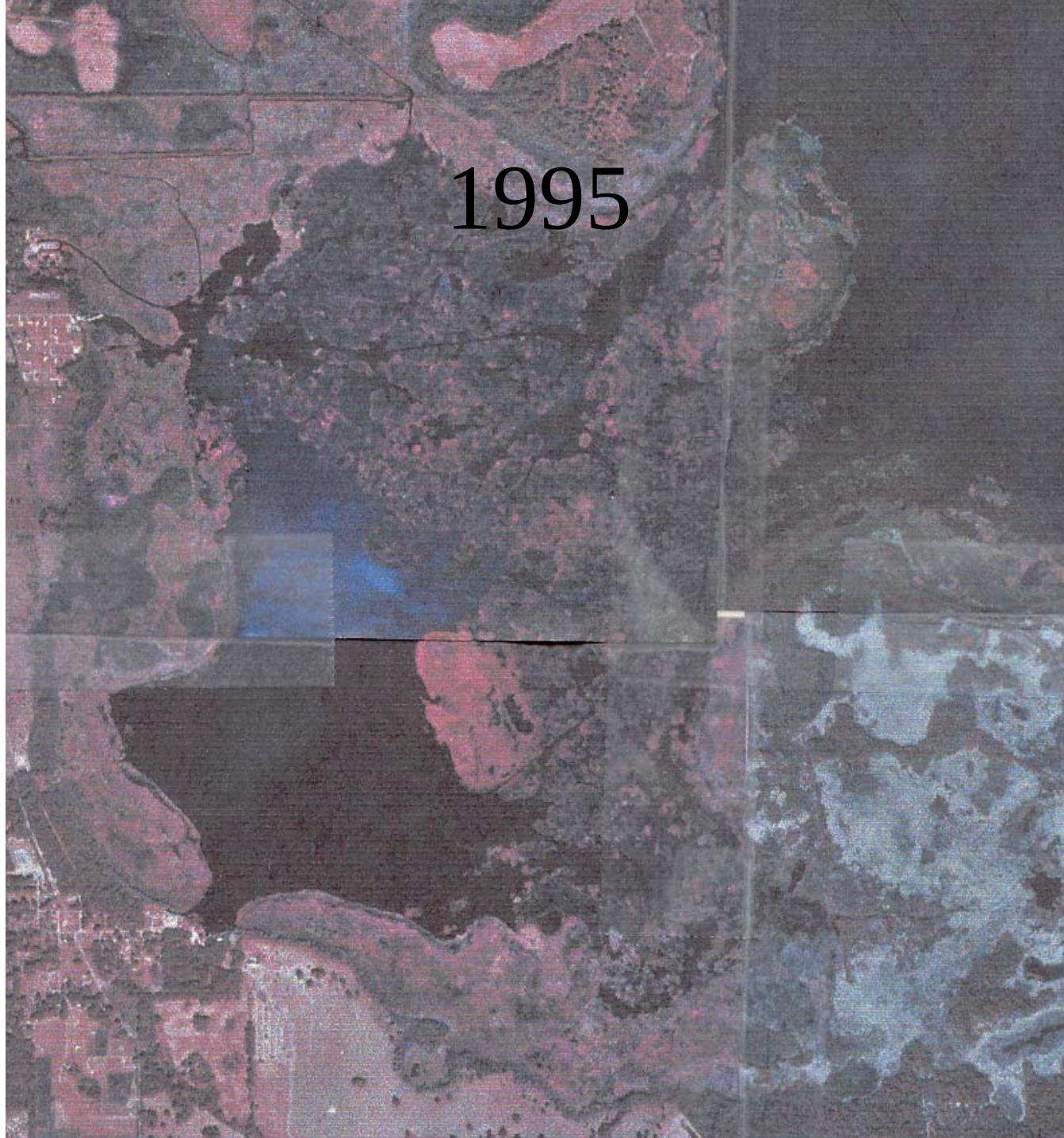


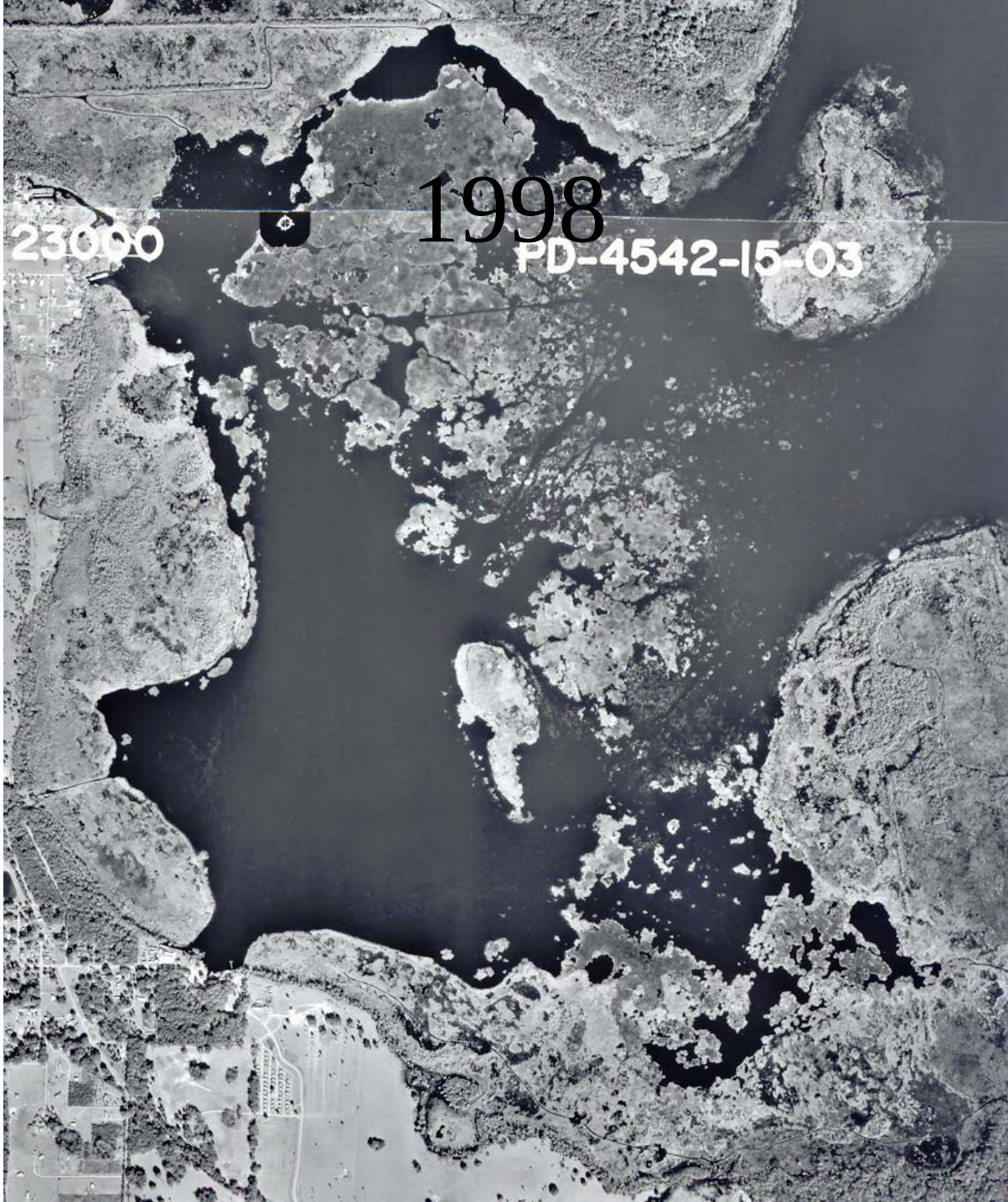
1991

1994

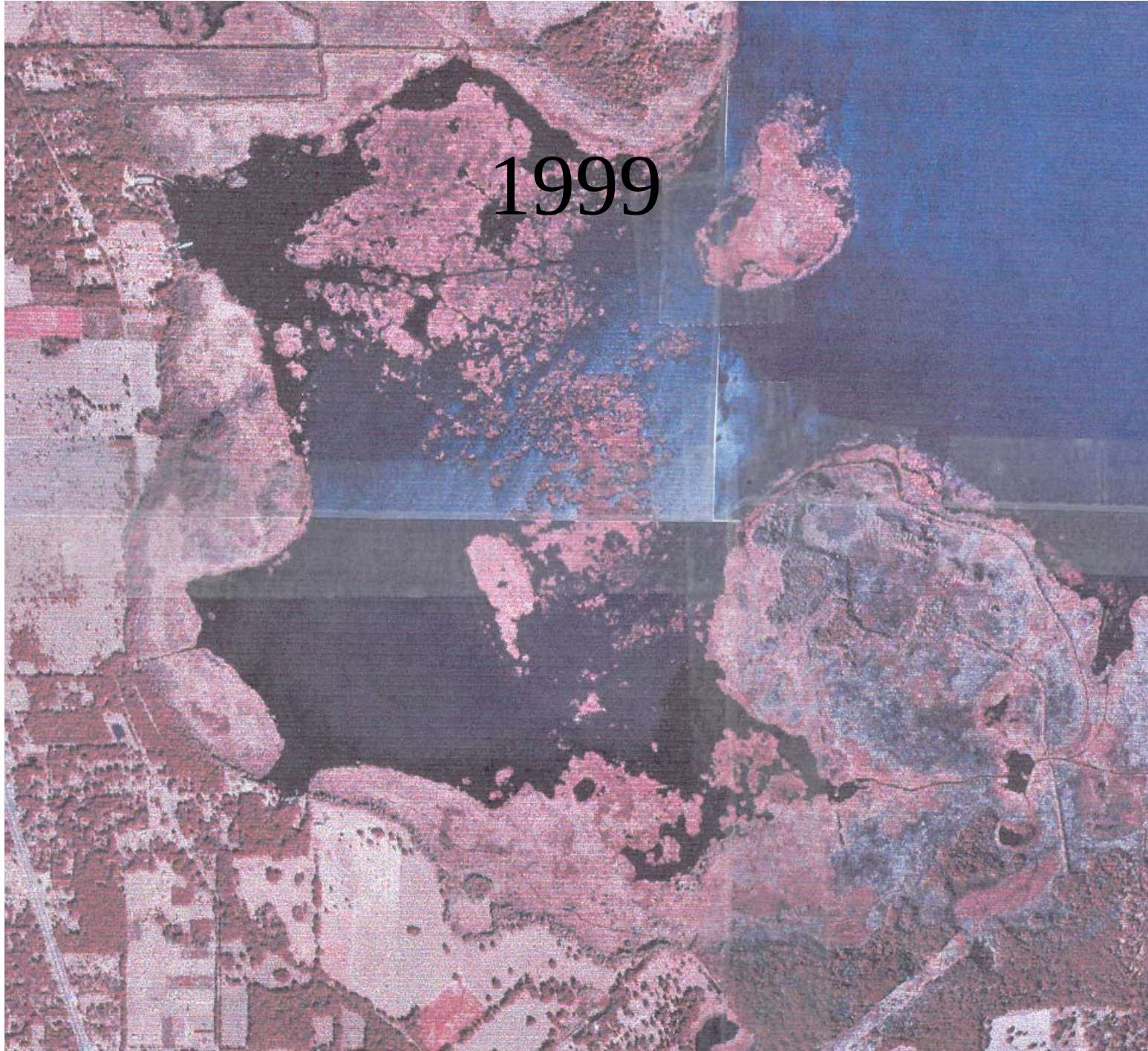


1995





1999

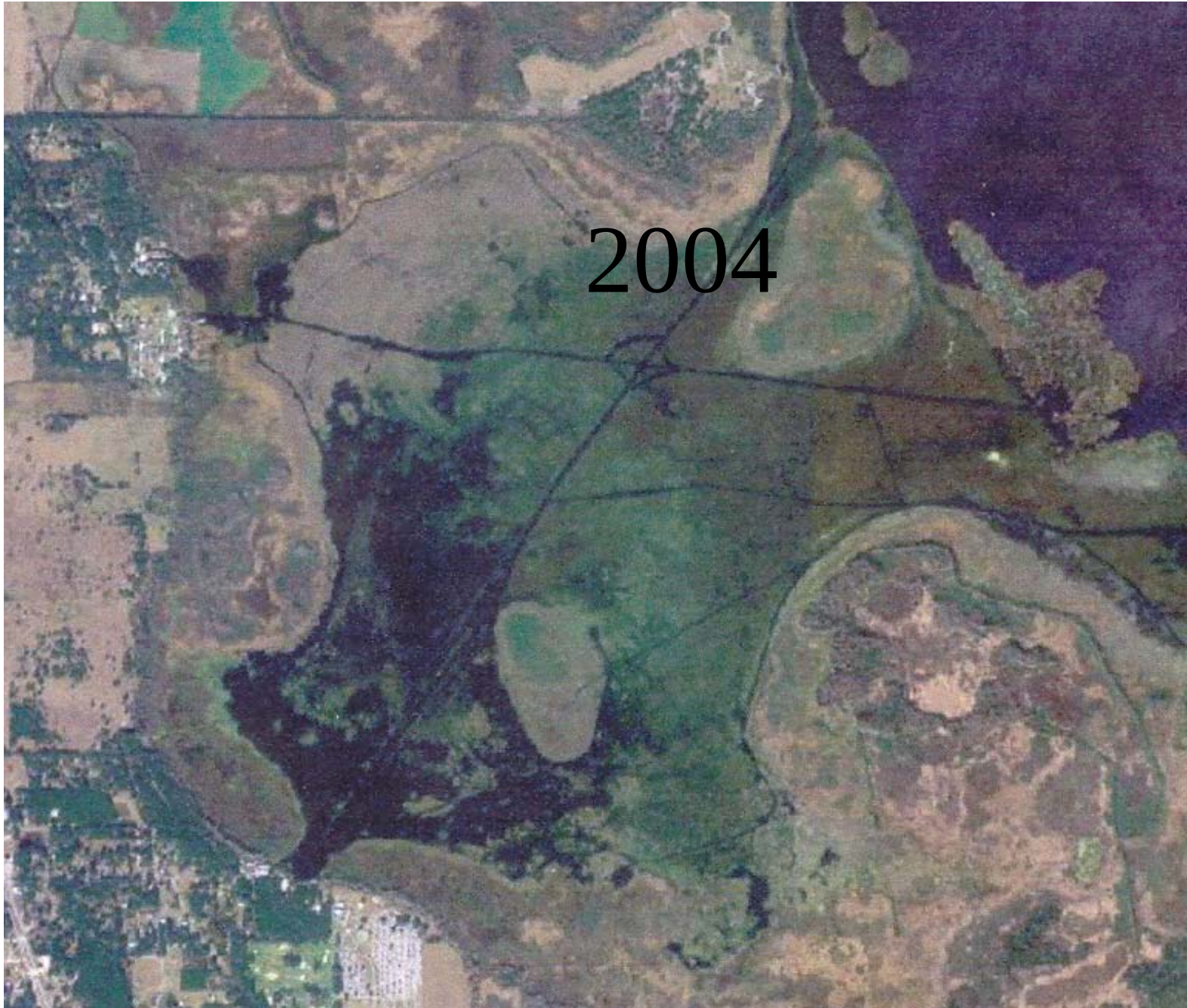


An aerial photograph of a coastal area, likely a river delta or estuary. The image shows a complex network of water channels and land areas. The land is mostly brown and tan, with some green patches indicating vegetation. The water is dark and appears to be flowing through the channels. The overall shape of the land area is irregular, with several large islands or peninsulas. The text "2001" is overlaid in the upper center, and "JAN 2001" and "1" = 300'" are in the lower right corner.

2001

JAN 2001
1" = 300'

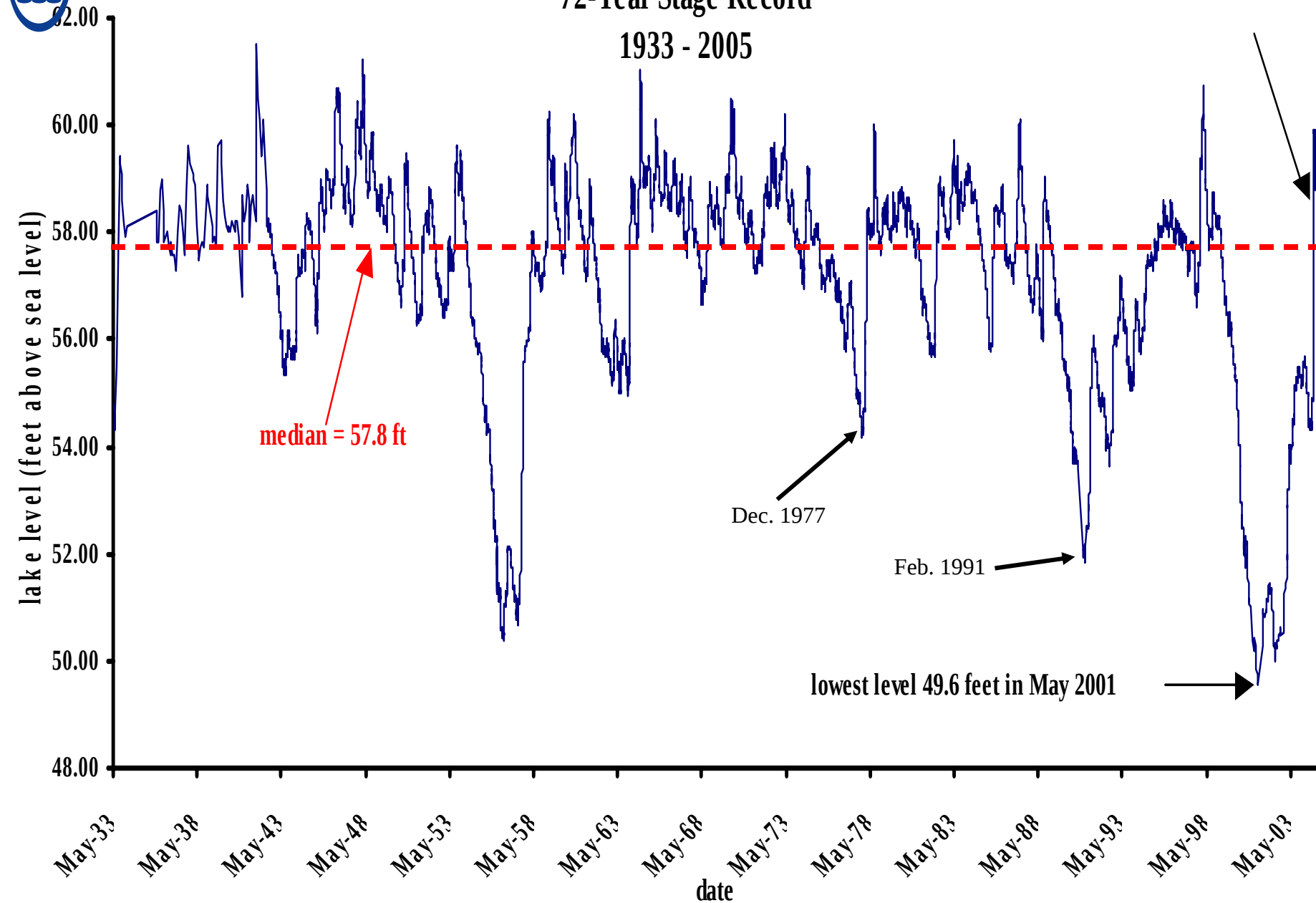
2004





Orange Lake 72-Year Stage Record 1933 - 2005

1/14/05 58.38 ft



Marion Co. Ramp at Orange Lake

2000



2001



2002



2003



Marion Co. Ramp at Orange Lake



Affects of Hurricanes in Orange

- 1500 acres of open water created from sinking out or packing vegetation on top of other vegetation.
- 80 MPH winds stirred up bottom sediments.
- Over 5 foot increase in water level resulted in volume increase from 38,000 acre feet to 103,000 acre feet.
- An additional 6,500 acres organic lake bottom and vegetation was flooded.

Tussock formation



Natural Means



Wildfires



Relocation Program



Herbicide management



Cutter

Floaters removed from rooted plants



Trail from fish camp to open lake



Mechanical Harvesting



Rotary Cultivator



Muck Removal

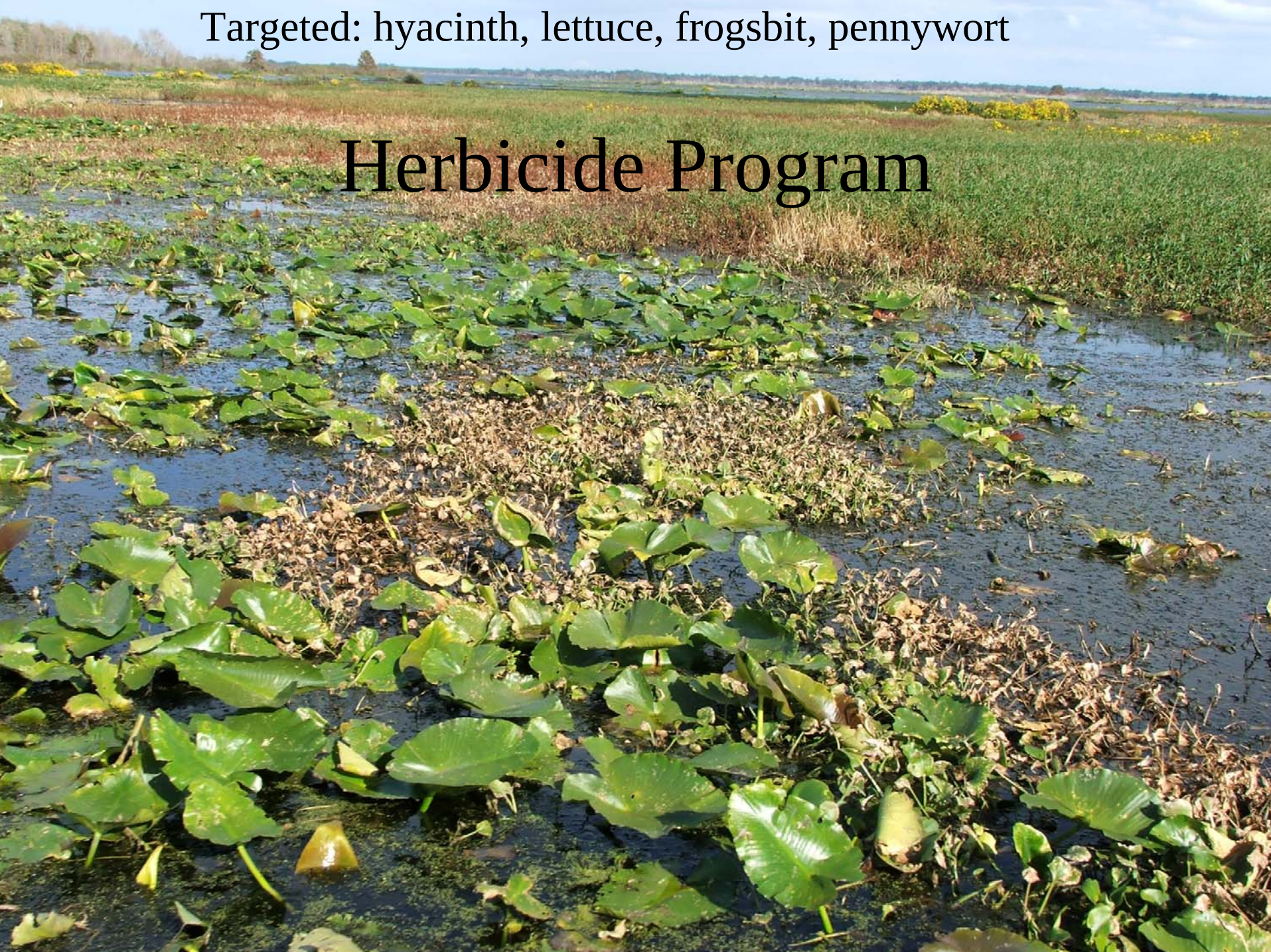


Goals for Orange Lake Tussocks

- Open up public ramps & fish camps.
- Provide navigation from public areas to lake
- Eliminate “problems” islands before they move and block public areas.
- Reduce damage to beneficial rooted plants from moving island.
- Provide openings in solid area of marsh for fish & wildlife habitat and for fire breaks.

Targeted: hyacinth, lettuce, frogsbit, pennywort

Herbicide Program



Targeted floating islands dominated by pickerelweed & cattails

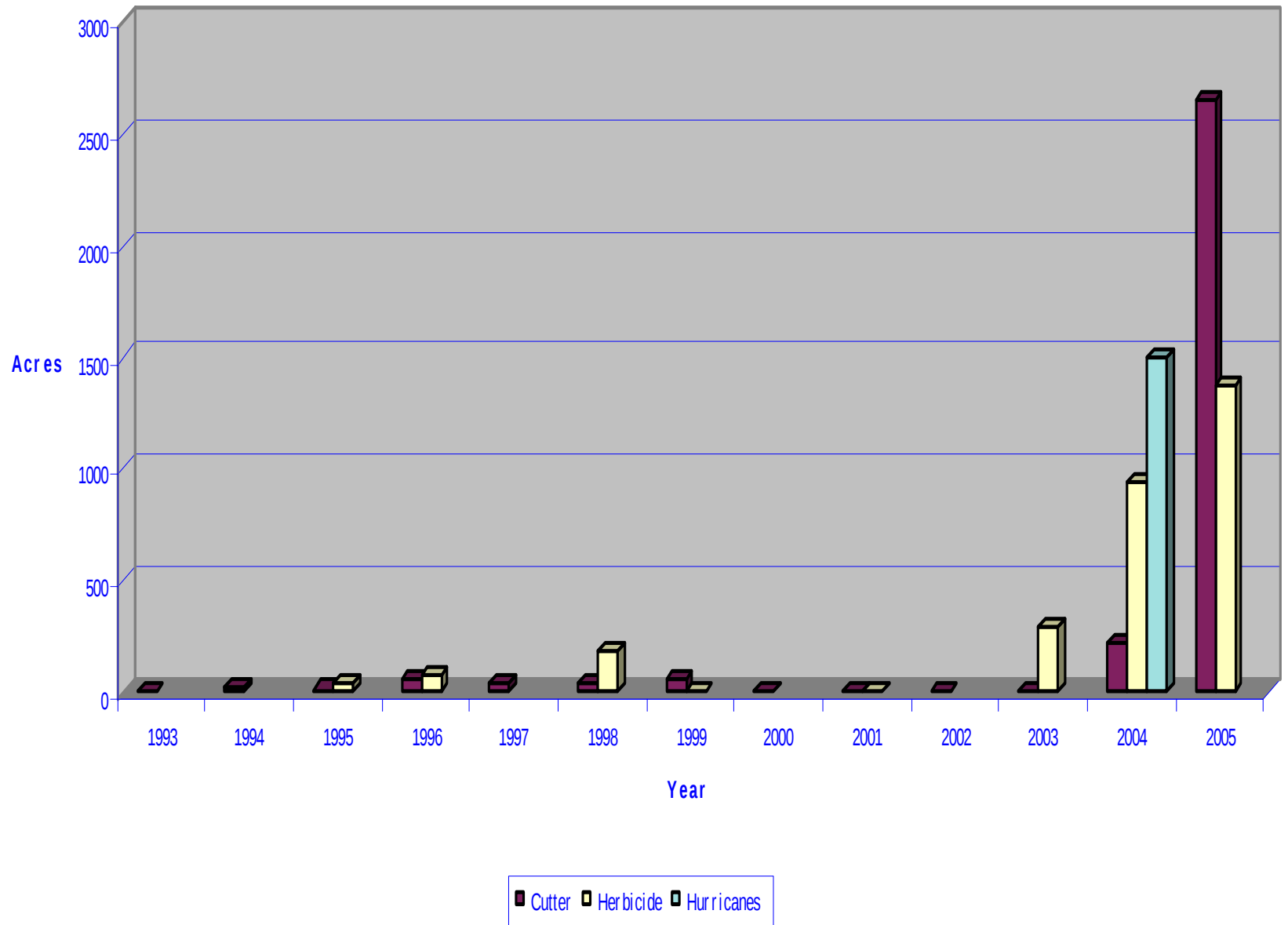
Cutter Program



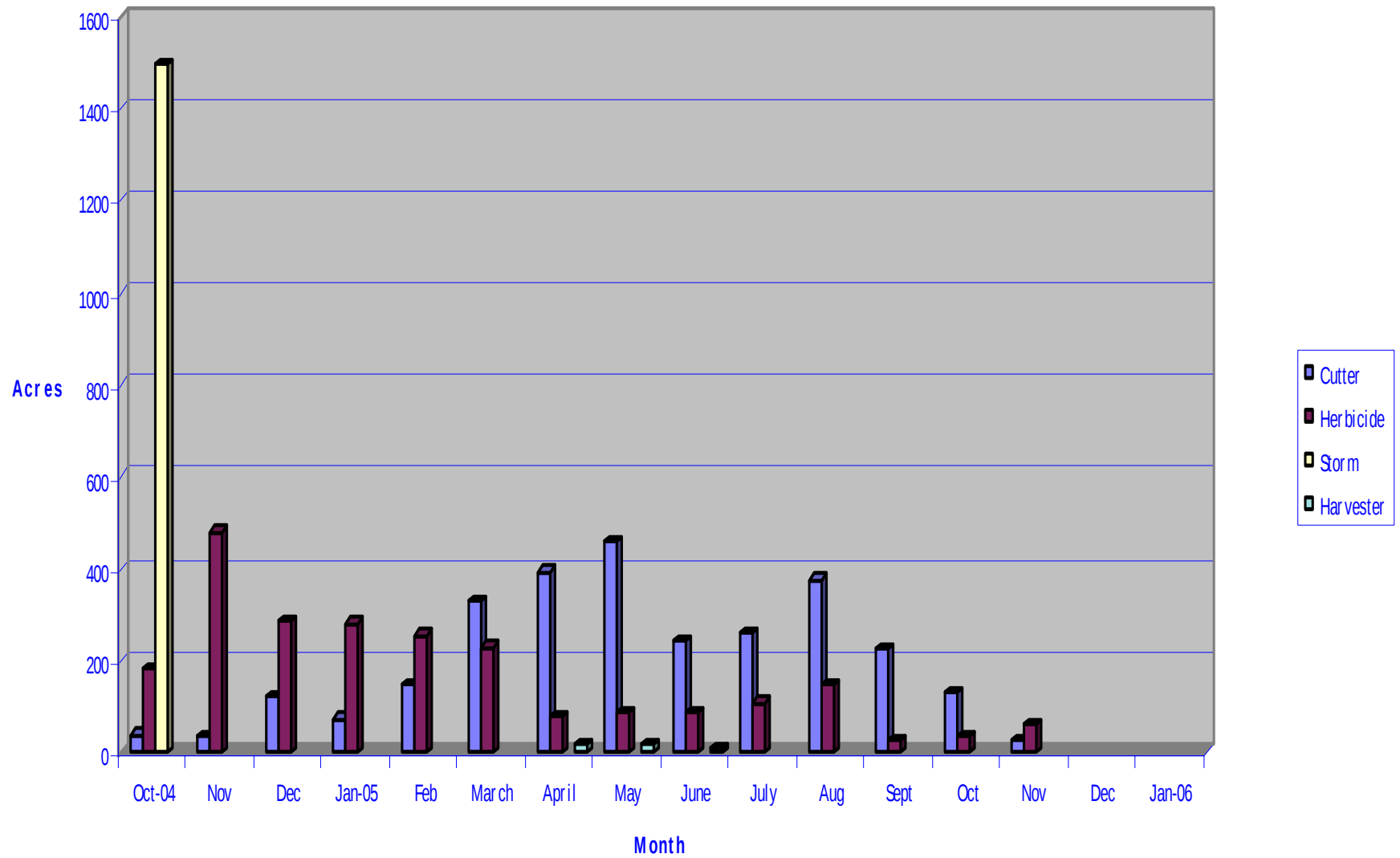
Orange Lake Tussock Summary

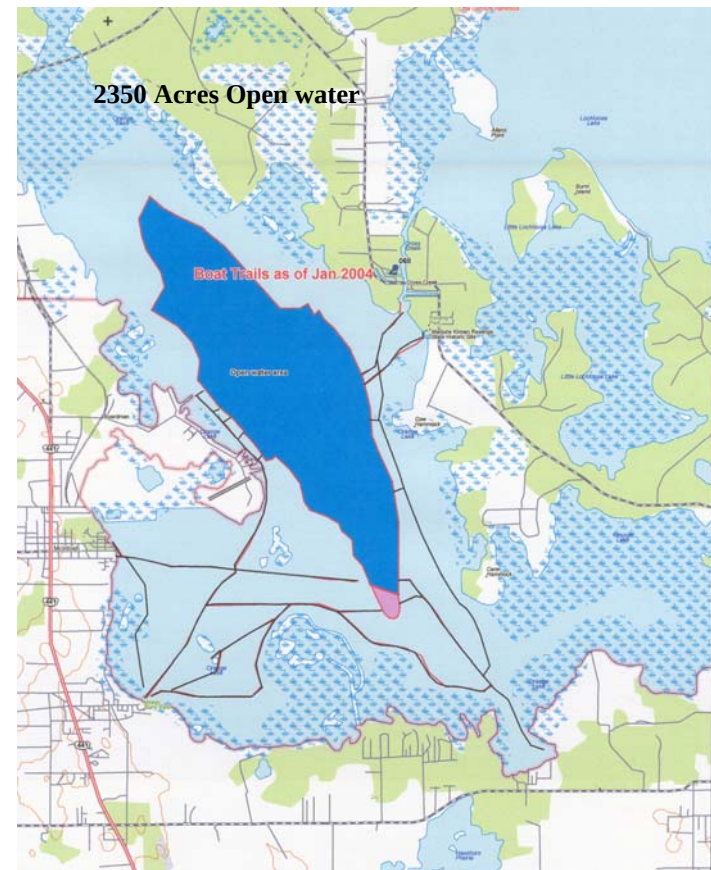
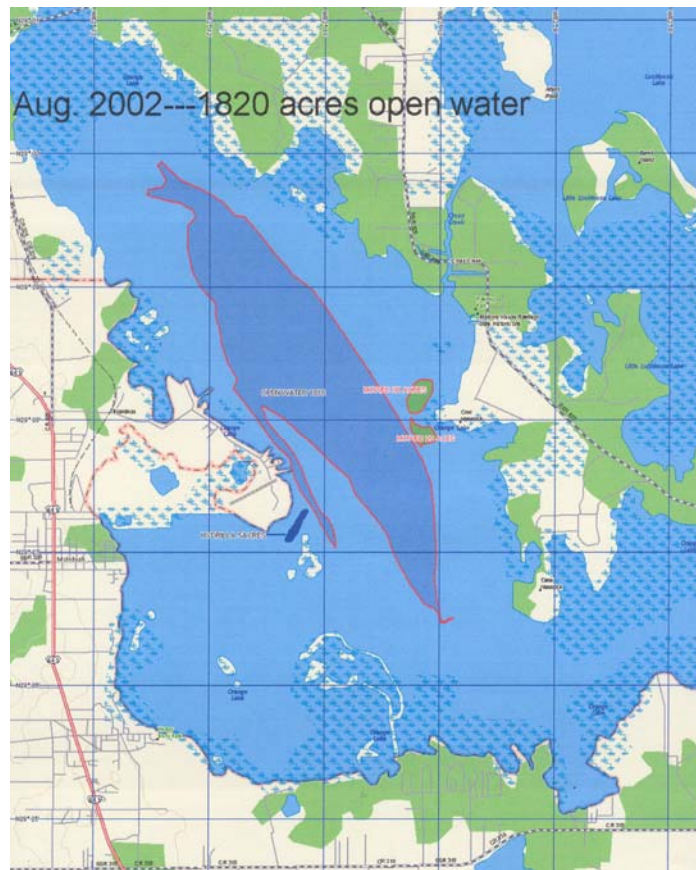
- Aug. 2002 to July 2004—1080 acres of open water as result of natural control and 40 acres of cutter work.
- Oct. 2004—1500 acres open water as result of storms.
- Oct. 2004 to present—1970 acres open water as result of 4959 acres of cutter, harvesting and herbicide control.
- Total acres of open water since Aug 2002=4480 acres
- 50% of lake still with vegetation.

Floating Island Control Orange



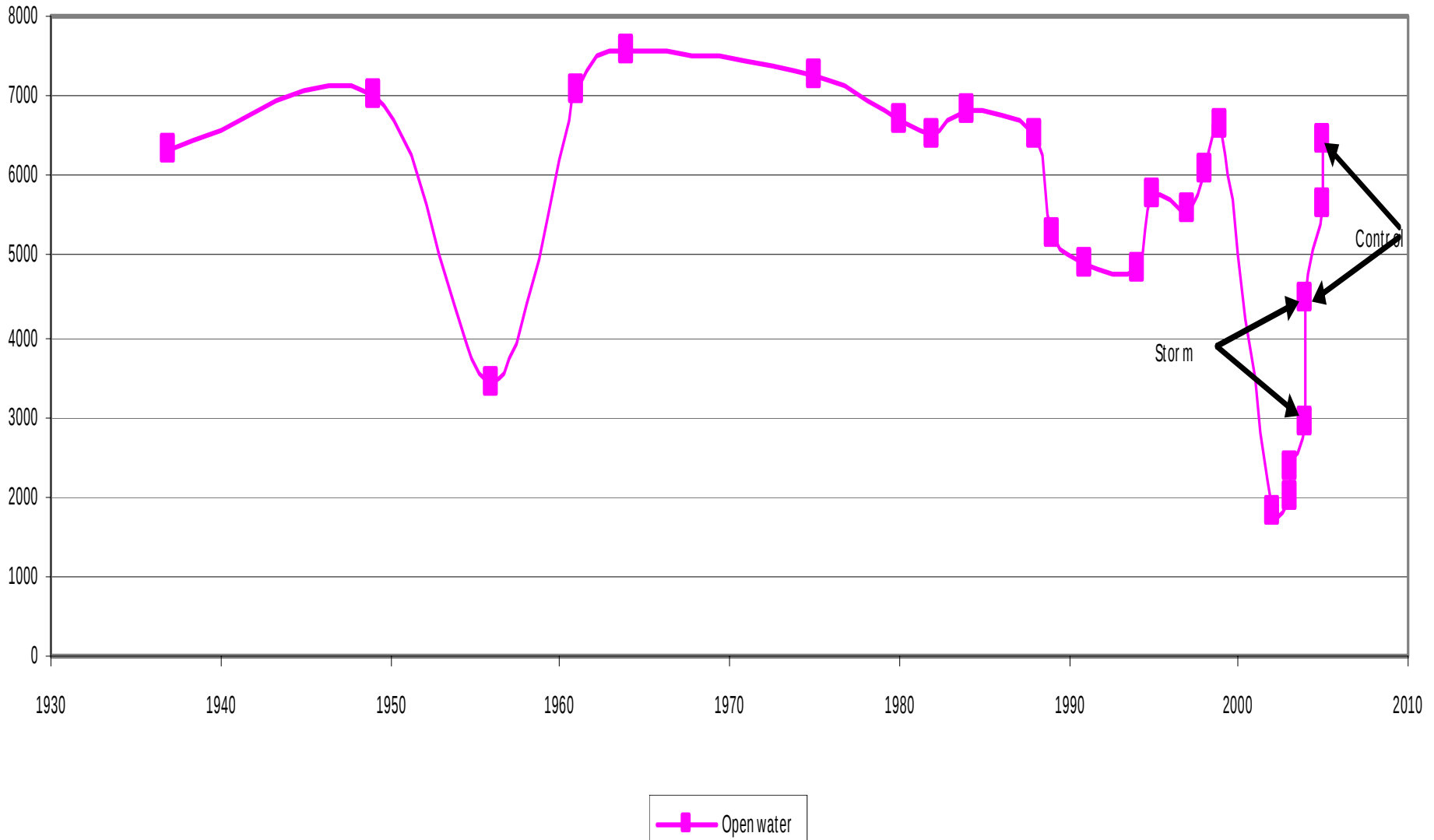
Tussock Control Orange Lake FWC & DEP



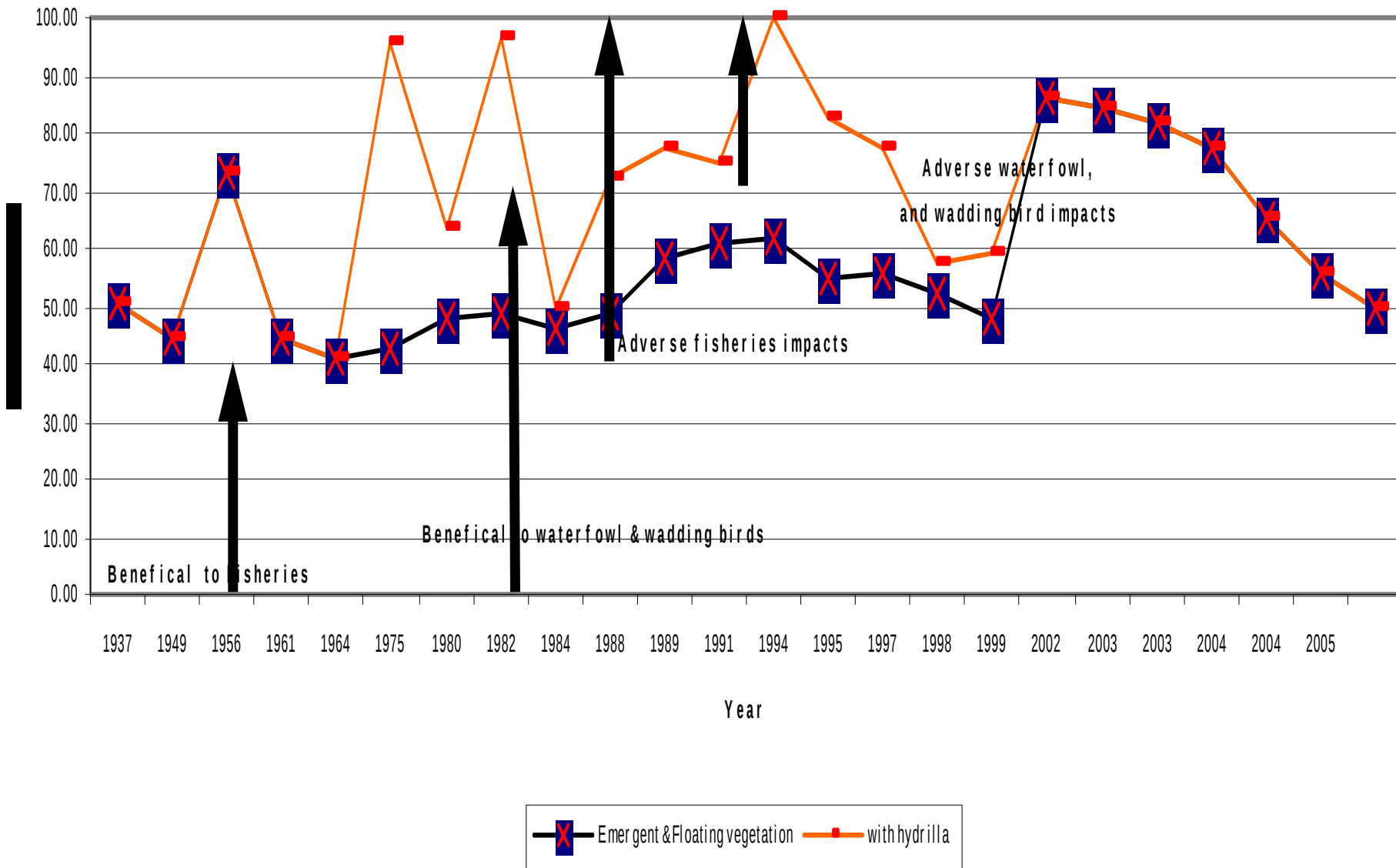




Acres of Open Water



Percent Vegetatoin in Orange Lake



Orange 2005

