REDUCING TURBIDITY IN BACK BAY ESTUARY

FOCUS ON LAKE TECUMSEH

http://www.fws.gov/northeast/virginiafield/partners/tecumseh.html

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U.S. Fish and Wildlife Service

INTRODUCTION

YOUR INPUT IS WANTED

PROJECT STATUS

- Public input in 2008 was clearly meaningful
- HRSD retracted the permit application and cancelled their habitat restoration agreement with the USFWS
- HRSD cancelled plans to post the lake
- HRSD allowed USFWS to reinstate the boat rollover mechanism in the weir proposal
- USFWS studies and monitoring will continue
- There will not be another permit submitted without public participation and consent

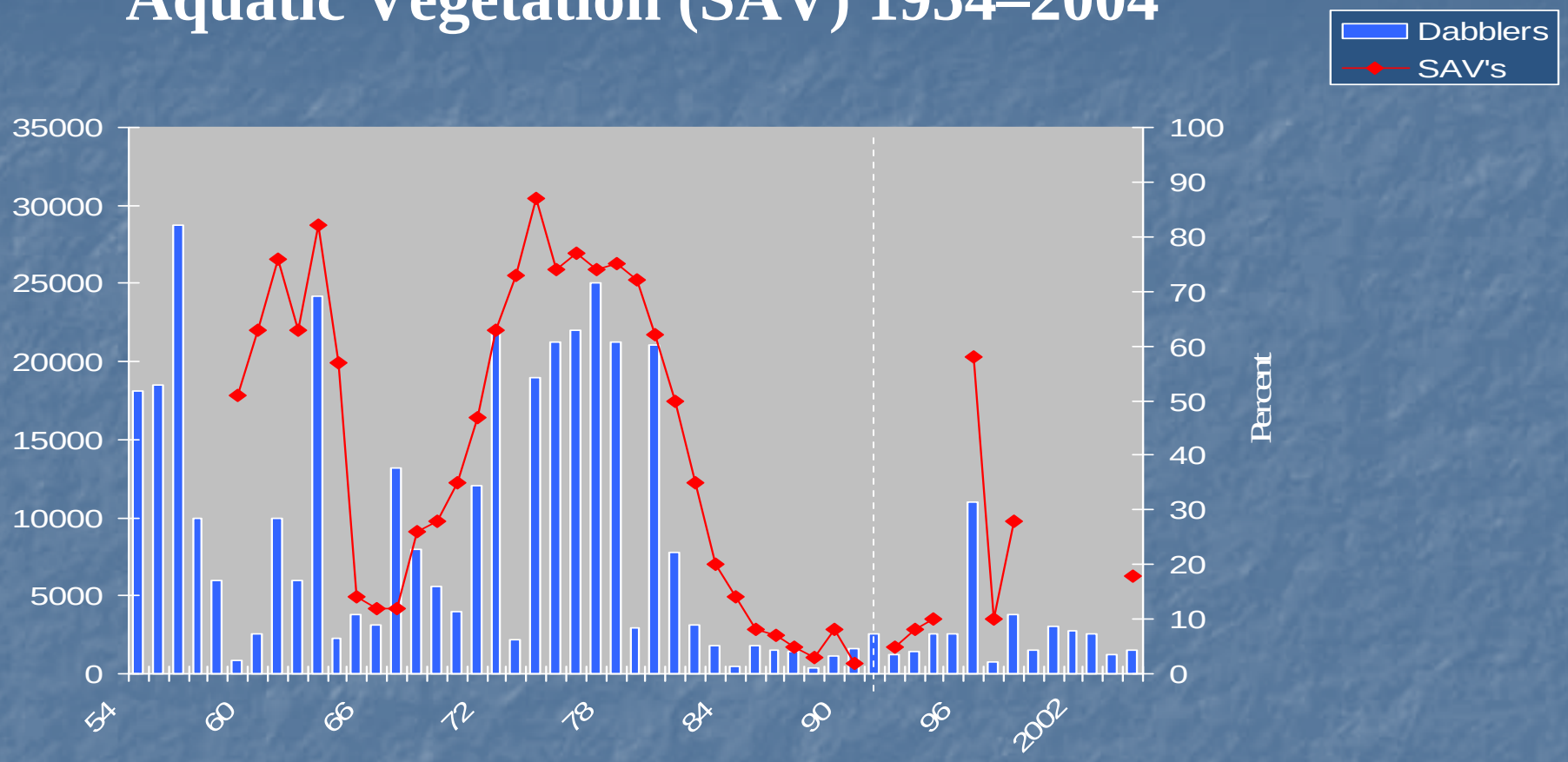
PROJECT GOALS and ACCOMPLISHMENTS

(based upon study results and public input)

- Reduce turbidity in Back Bay estuary and restore submerged aquatic vegetation (improve water quality)
- Improve and enhance recreational fishing and boating opportunities in Tecumseh
- Not increase or cause flooding on private property
- Maintain private property values and public access

Why be concerned about suspended sediment and SAV?

Dabbling ducks and frequency of Submerged Aquatic Vegetation (SAV) 1954–2004



Back Bay: A Nationally Significant Estuary

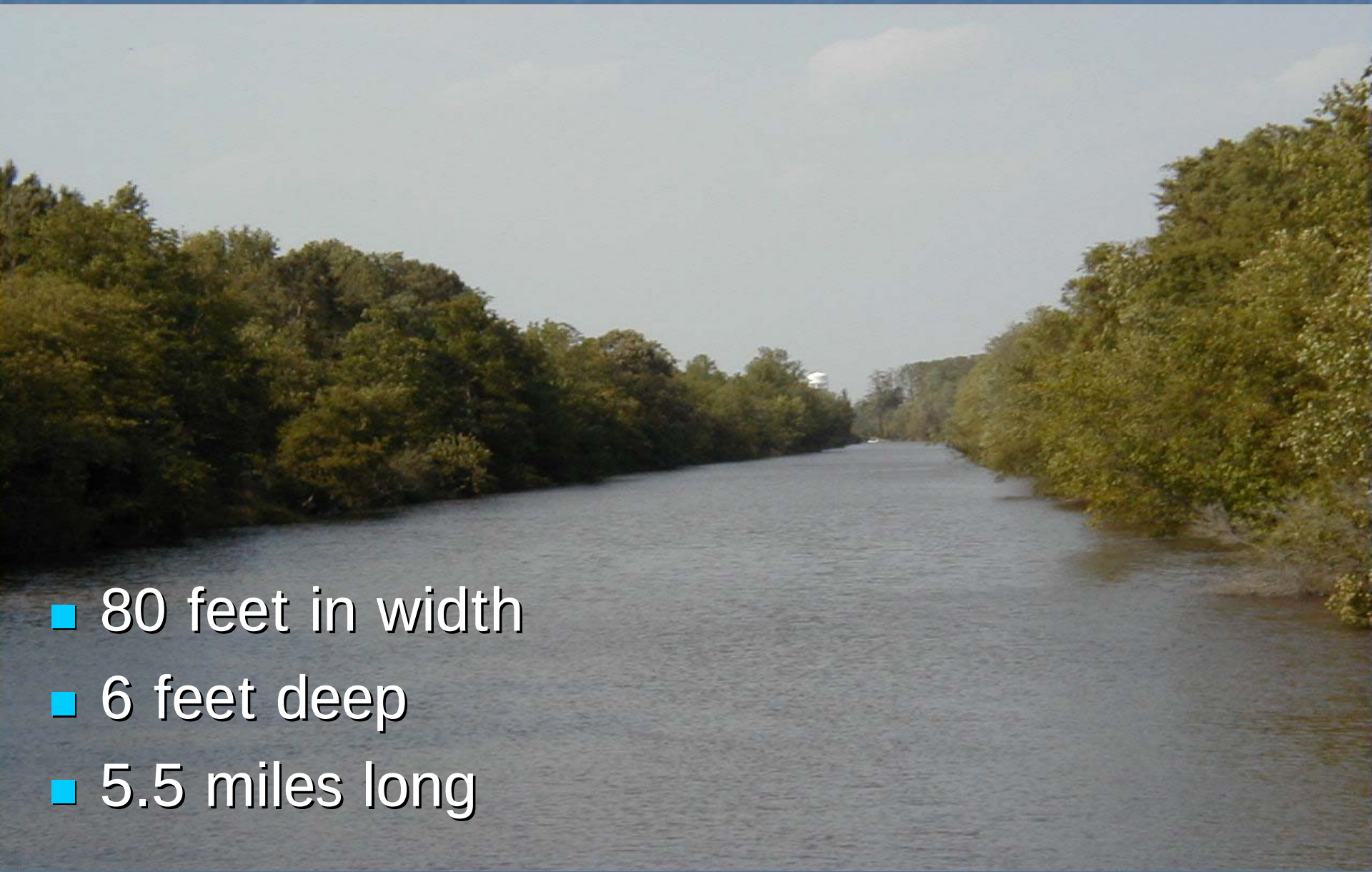
Lake Tecumseh Drainage Basin

12.8 sq. mi.

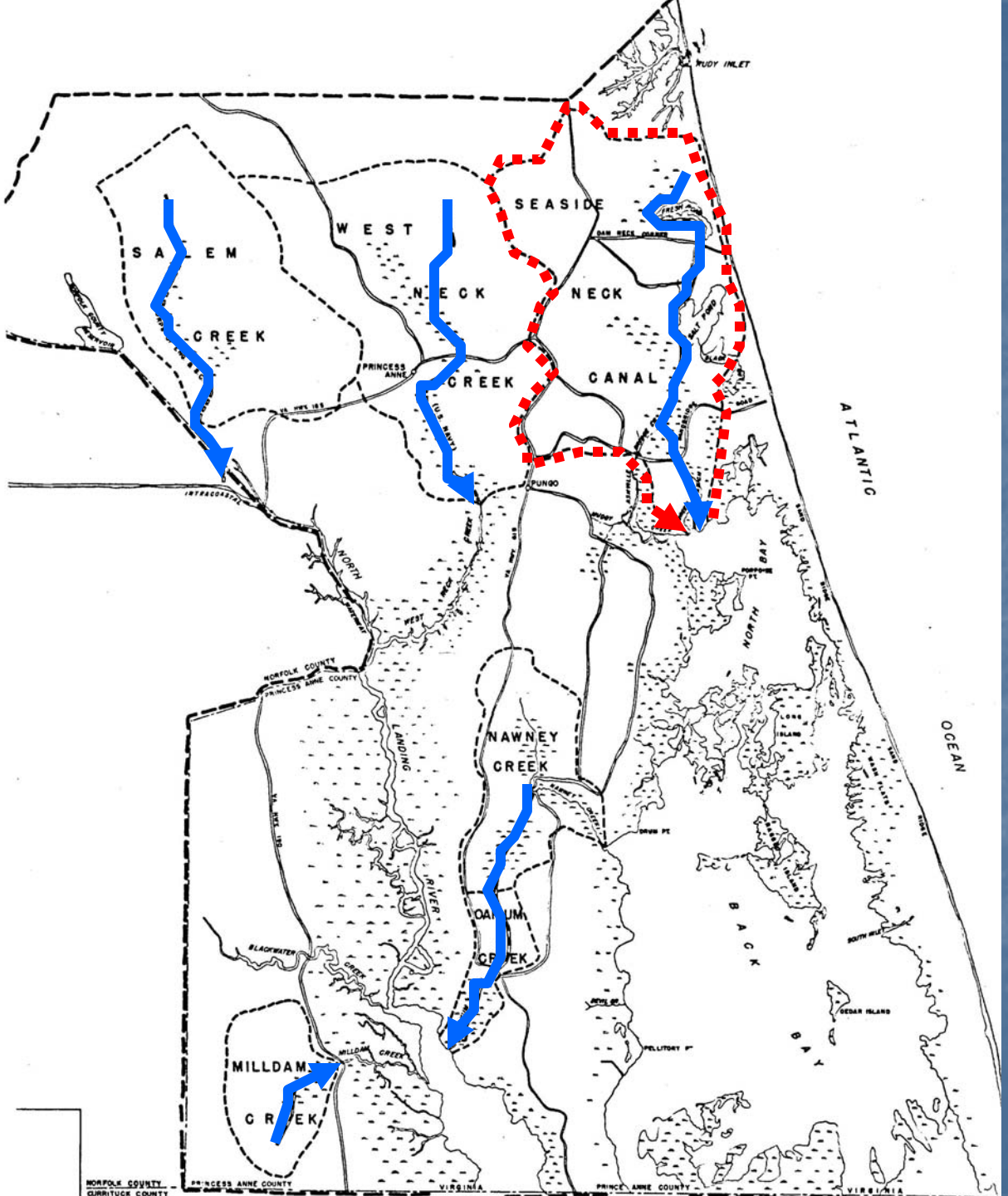
8192 acres

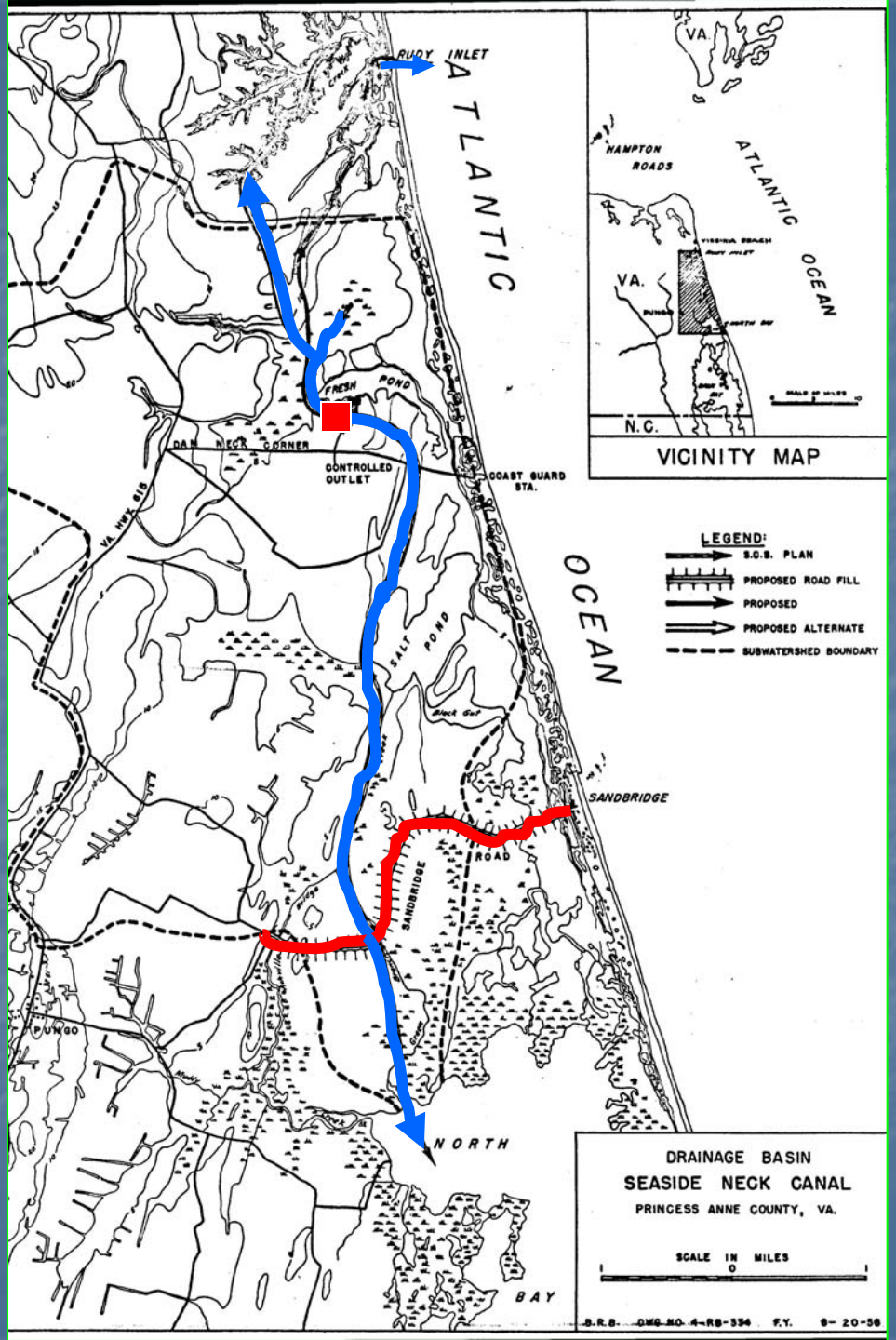
- 261 acres
- 2-3 feet deep

Asheville Bridge Canal



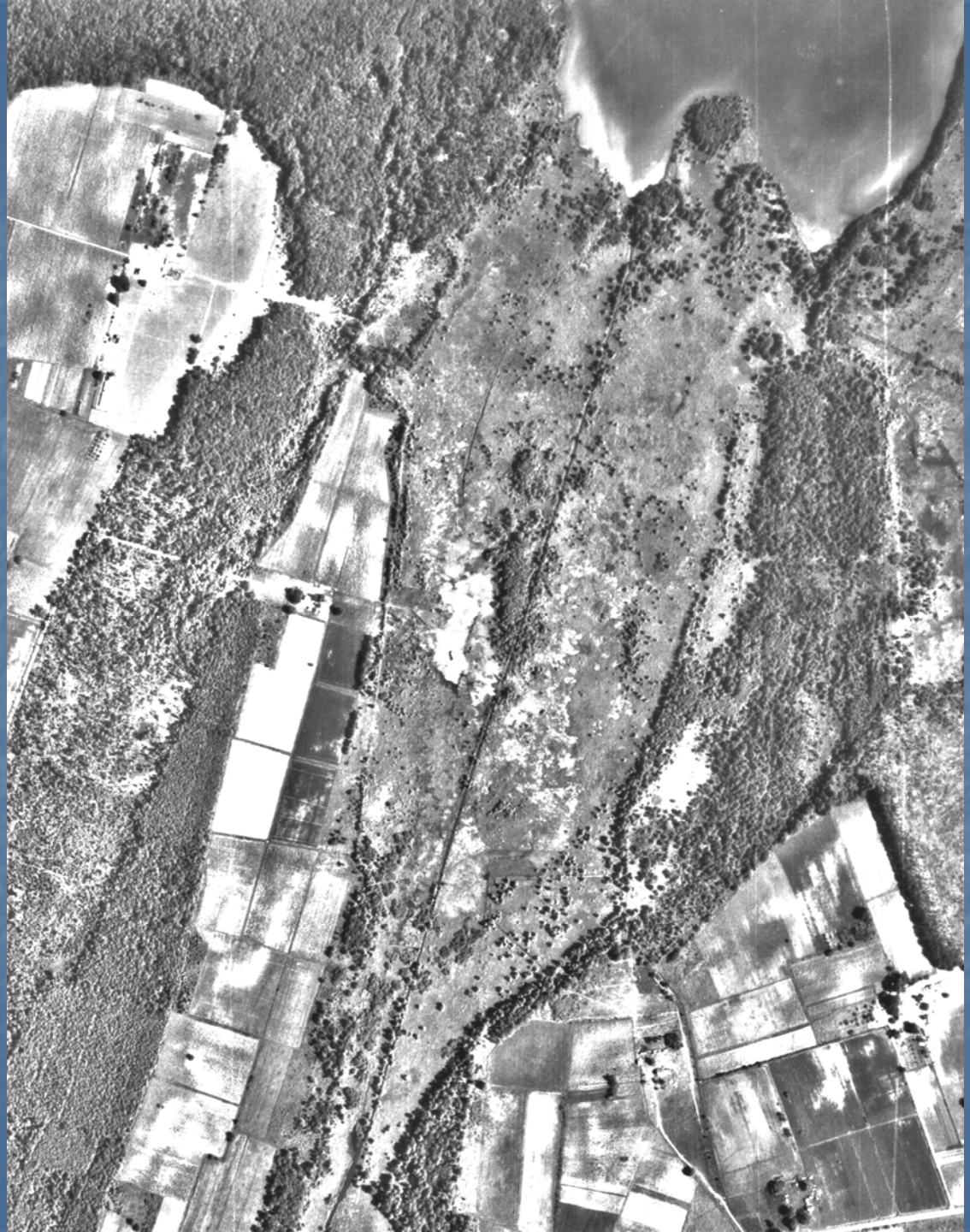
- 80 feet in width
- 6 feet deep
- 5.5 miles long


MUDY INLET
SEASIDE
NECK
CANAL
WEST
NECK
CREEK
SALEM
CREEK
PRINCESS ANNE
PUNGO
ATLANTIC
OCEAN
NORTH
BAY
NAWNEY
CREEK
OAKUM
CREEK
MILLDAM
CREEK
NORFOLK COUNTY
PRINCESS ANNE COUNTY
LANDING
RIVER
BLACKWATER
BACK
BAY
CEDAR ISLAND
PELLITORY
VIRGINIA
CURRITUCK COUNTY

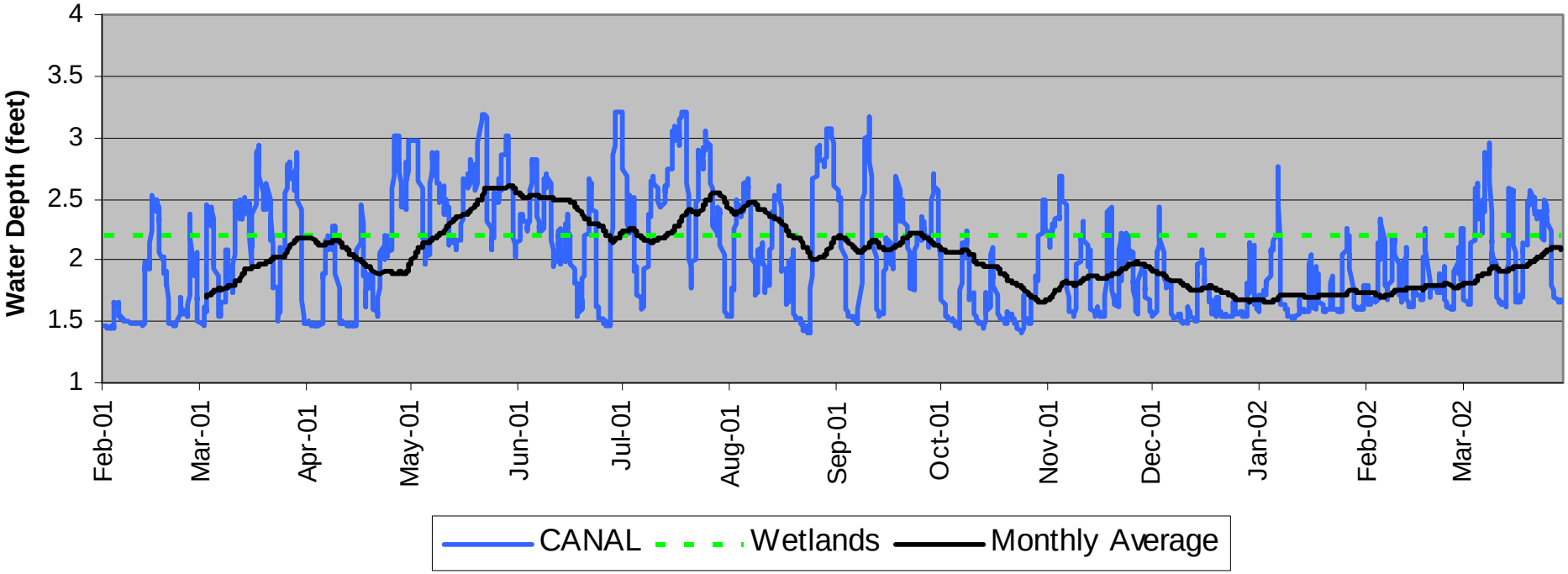


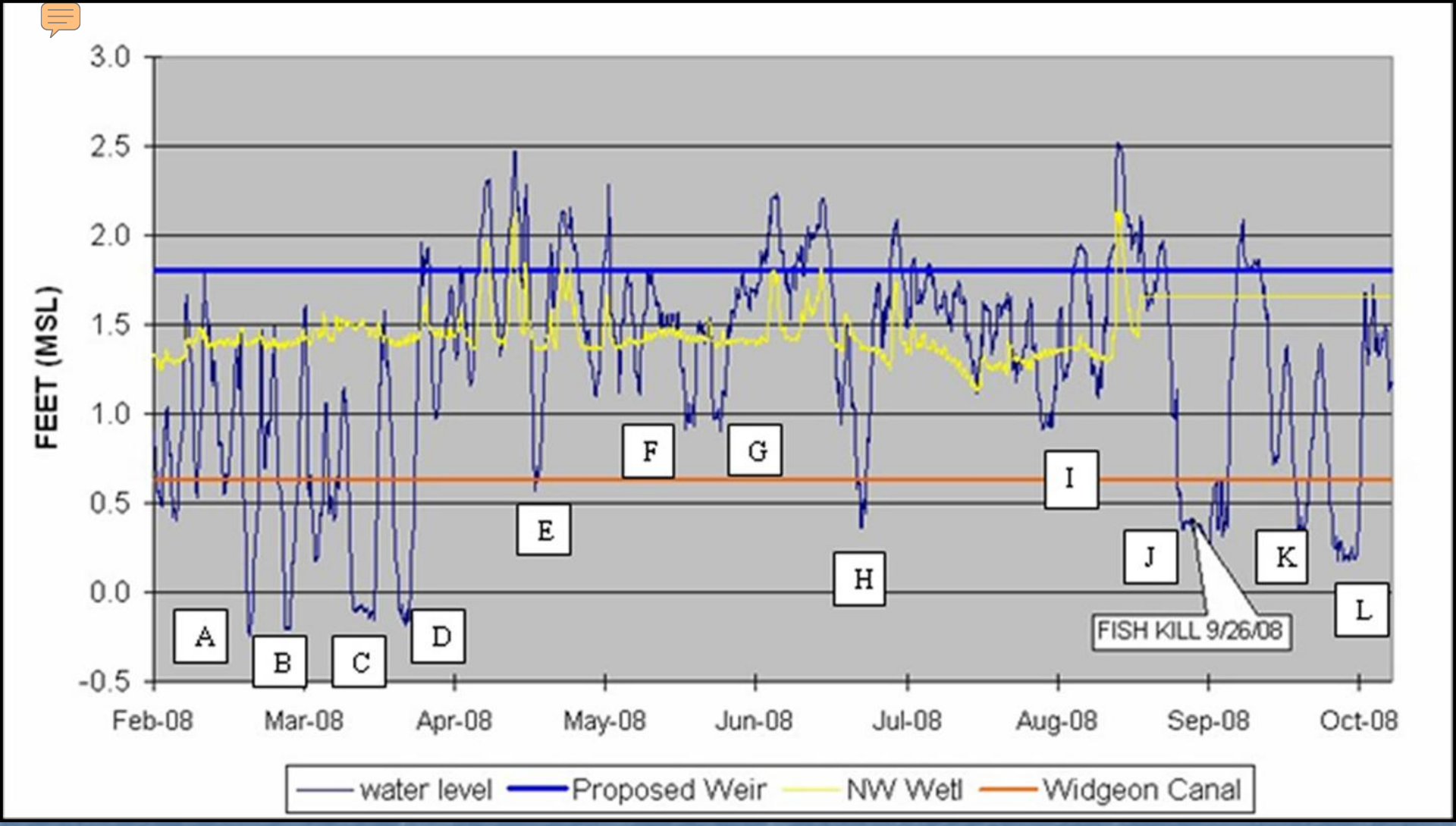
- “irreparable harm”
- 130 tons released in 1.5 inch rainfall

Scopus Marsh circa 1970



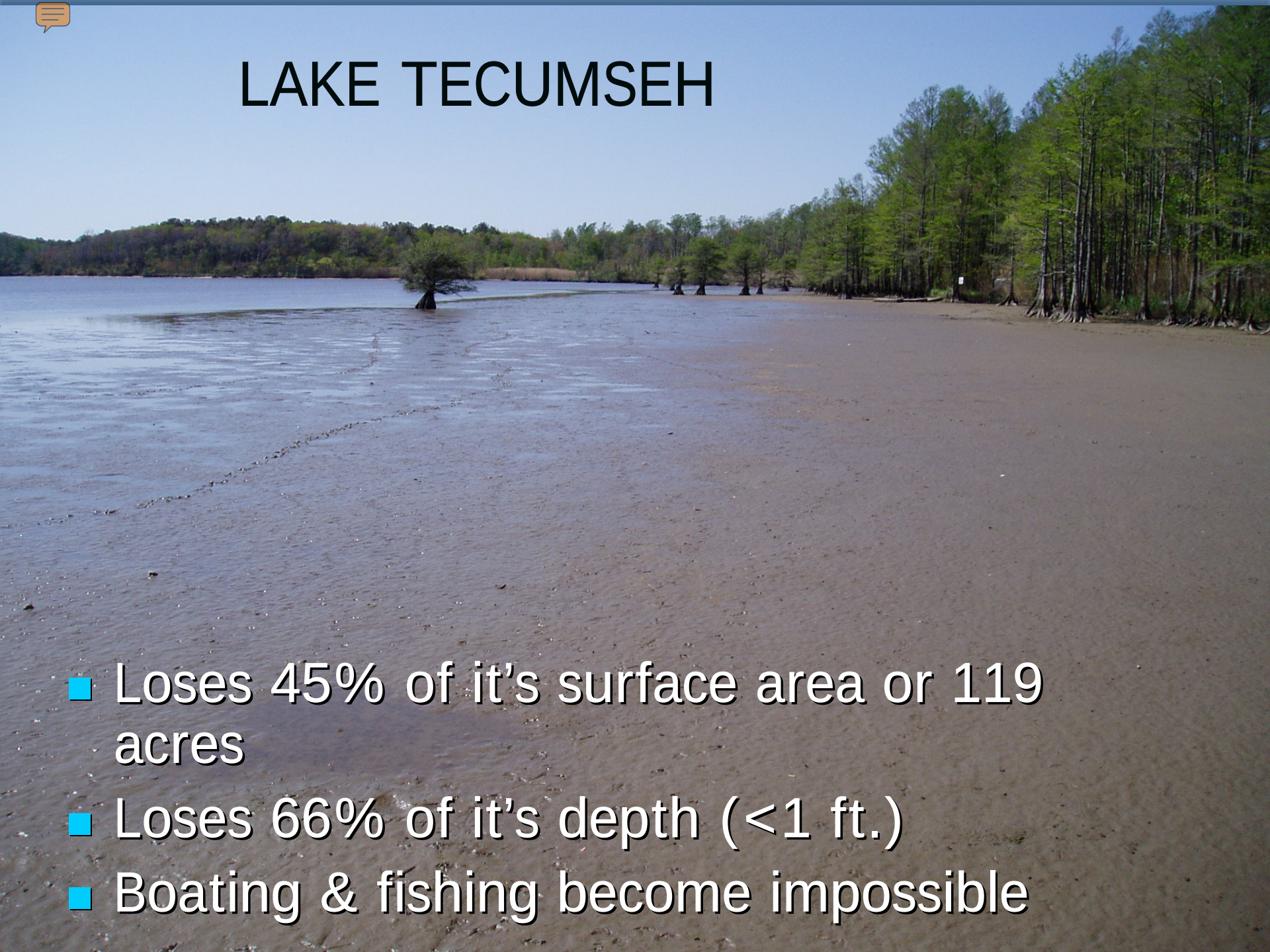
ASHEVILLE BRIDGE CANAL AND ADJACENT WETLANDS HYDROGRAPH
February 2001-April 2002





A)03/20/08, 43mph gusts
B)03/28/08, 33mph gusts
C)04/12/08, 38 mph gusts
D)04/21/08, 31mph gusts
E)05/15/08, 22mph gusts
F)06/17/08, 37 mph gusts
G)06/27/08, 32mph gusts
H)07/23/08, 36mph gusts
I)08/31/08, 20mph gusts
J)09/26/08, 47 mph gusts
K)10/18/08, 32 mph gusts
L)10/27/08, 40 mph gusts.

LAKE TECUMSEH



- Loses 45% of it’s surface area or 119 acres
- Loses 66% of it’s depth (<1 ft.)
- Boating & fishing become impossible

LAKE TECUMSEH

- Drainage events last between 1-18 days
- Flood events last 1-22 days
- ~15 major events per year, 30 events total
- Each event discharges 436 ac-ft of water

- 9 or more sites measured with a turbidity meter

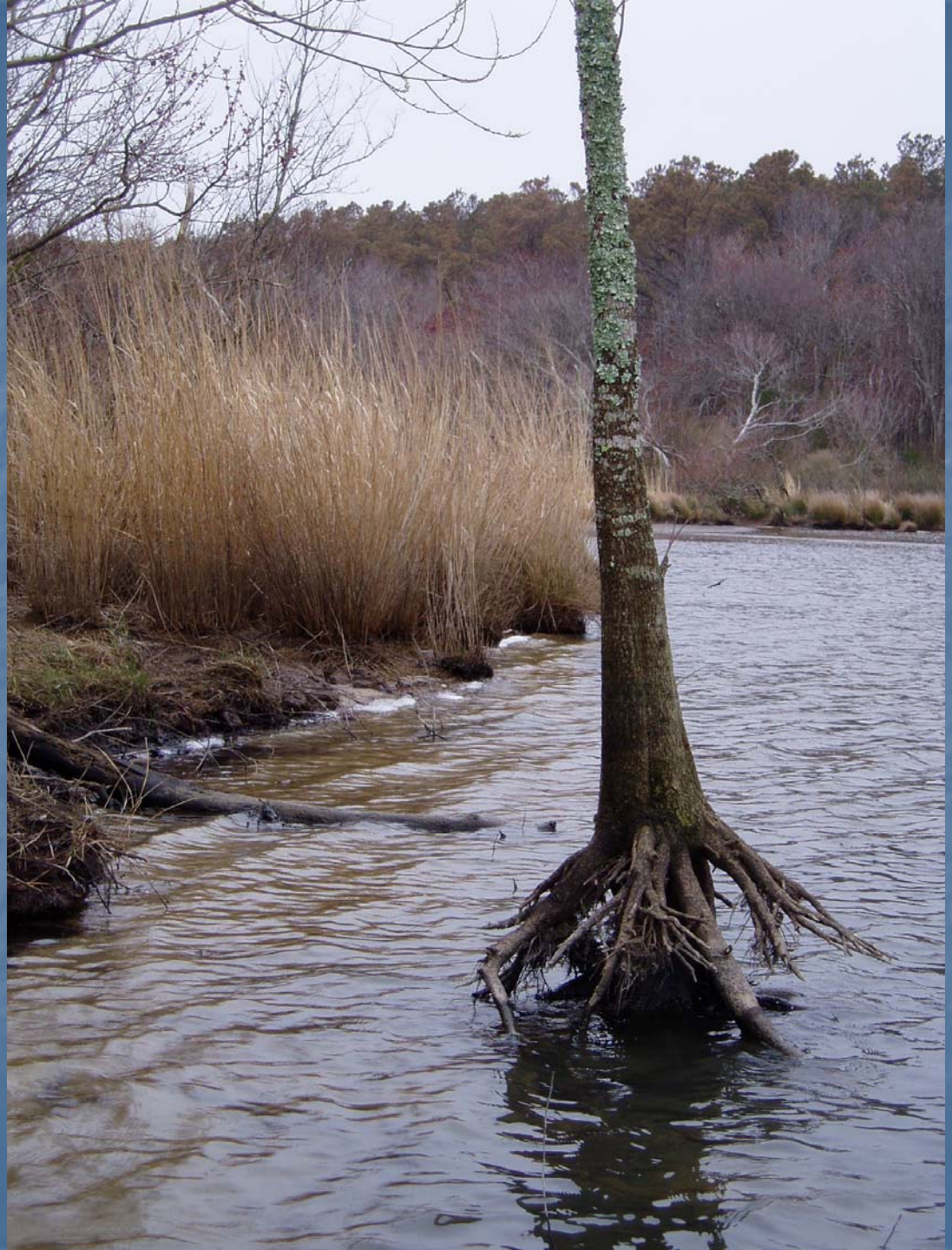
Site:	Ocean Lakes	Redwing	Lago Mar	ABC B4 Lake	Lake T.	Heritage Park	Hell Pt. Creek	ABC SandBdge	Blackgut
NTU	18	7	7	4-7	48-67	7	10	38-74	0-2
ppt	0.3	0.3	0.1	1.3	2.0	0.1	0.1	1.9	0.1

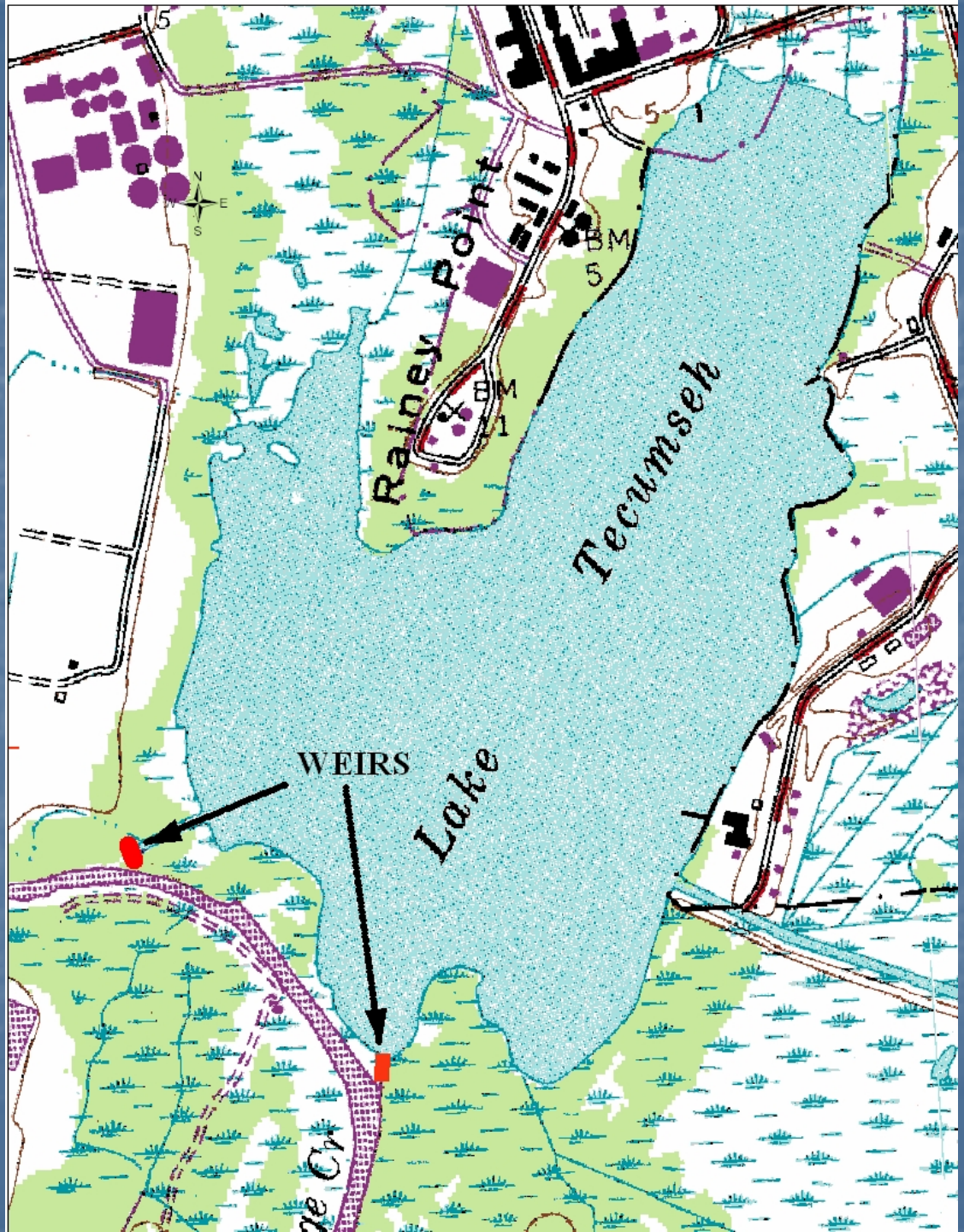
NTU - Visibility conversion: 0 ntu = 5 feet, 25 ntu = 10-12 inches, 60 ntu = 5 inches

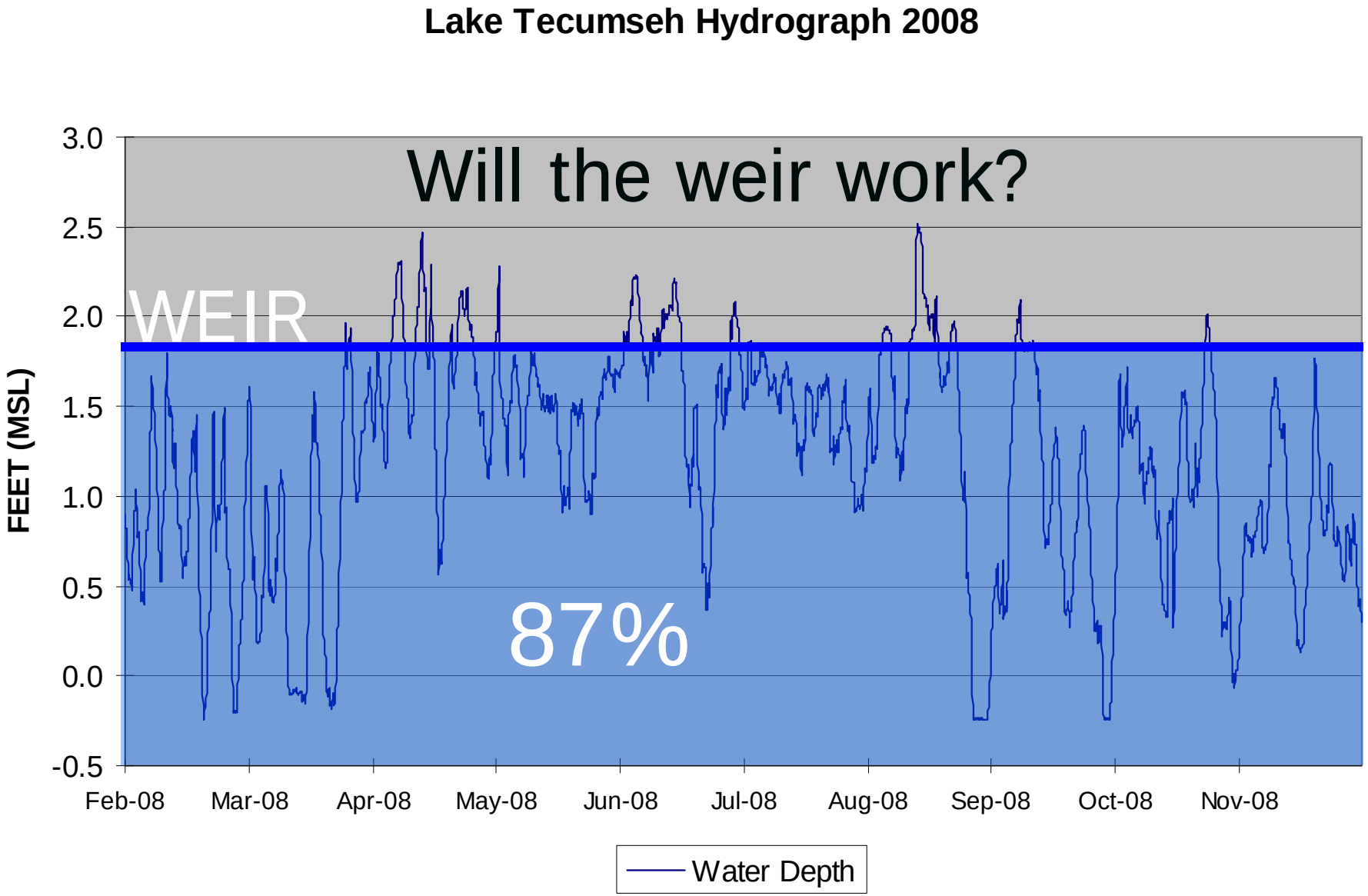
134 tons of
suspended sediment
released
70% are finer than 0.005 in.

ANNUAL SEDIMENT RELEASE TO BACK BAY FROM LAKE TECUMSEH

- 175 tons x 10 events = 1750 tons/year (1958)
- 134 tons x 15 events = 2010 tons/year (2008) or 100 truck loads
- .045 in. per year (.003)




Rainey Point
Tecumseh
Lake
WEIRS
BM
5
BM
1
N
E
S


Lake Tecumseh Hydrograph 2008
Will the weir work?
WEIR
87%
FEET (MSL)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Water Depth

ISSUES with WEIRS

- Effect on boat navigation

- negative effect
- positive effect (property values)

WIDGEON LANE

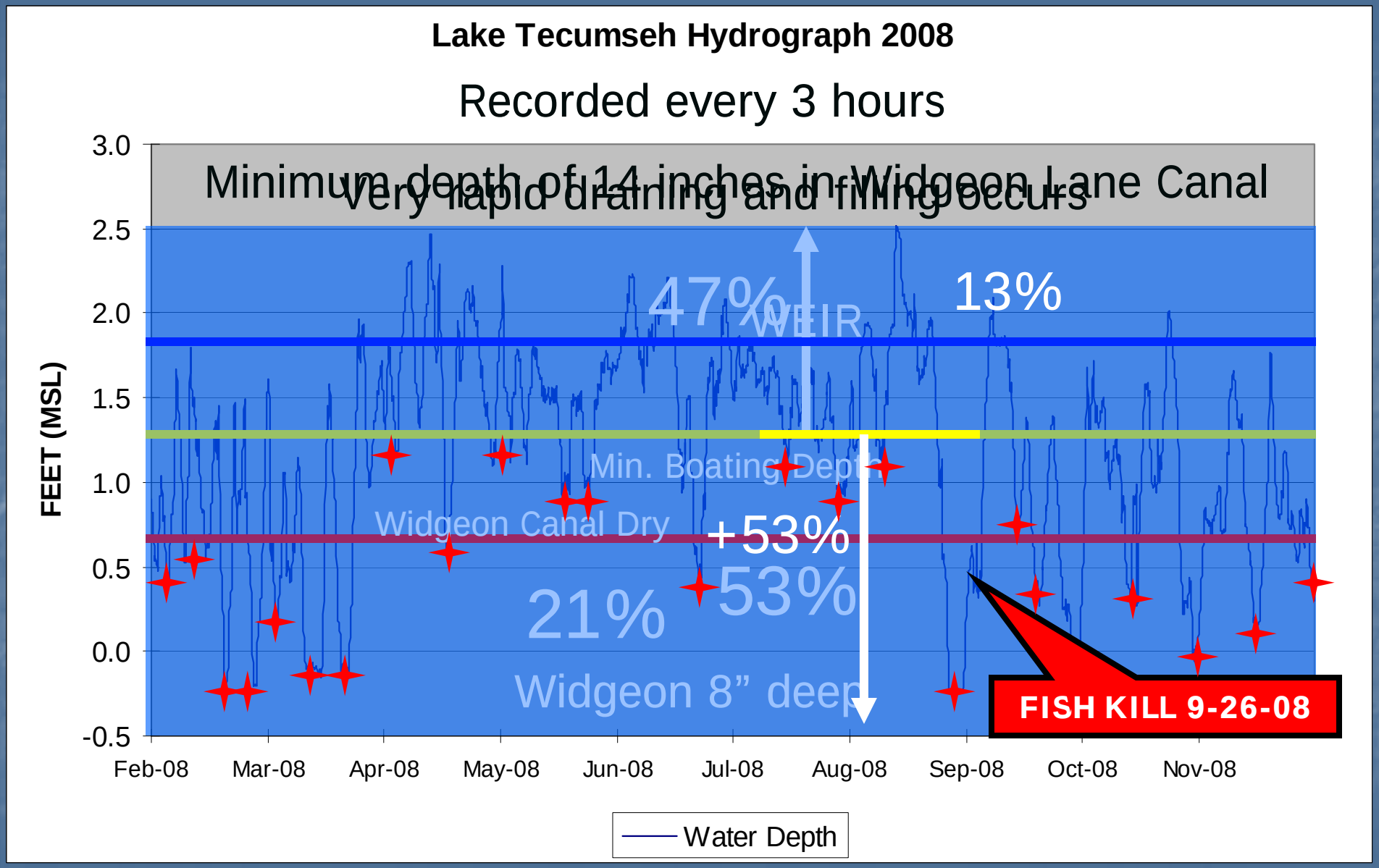
- 34 properties
- 13 docks

Boat Rollover Mechanism

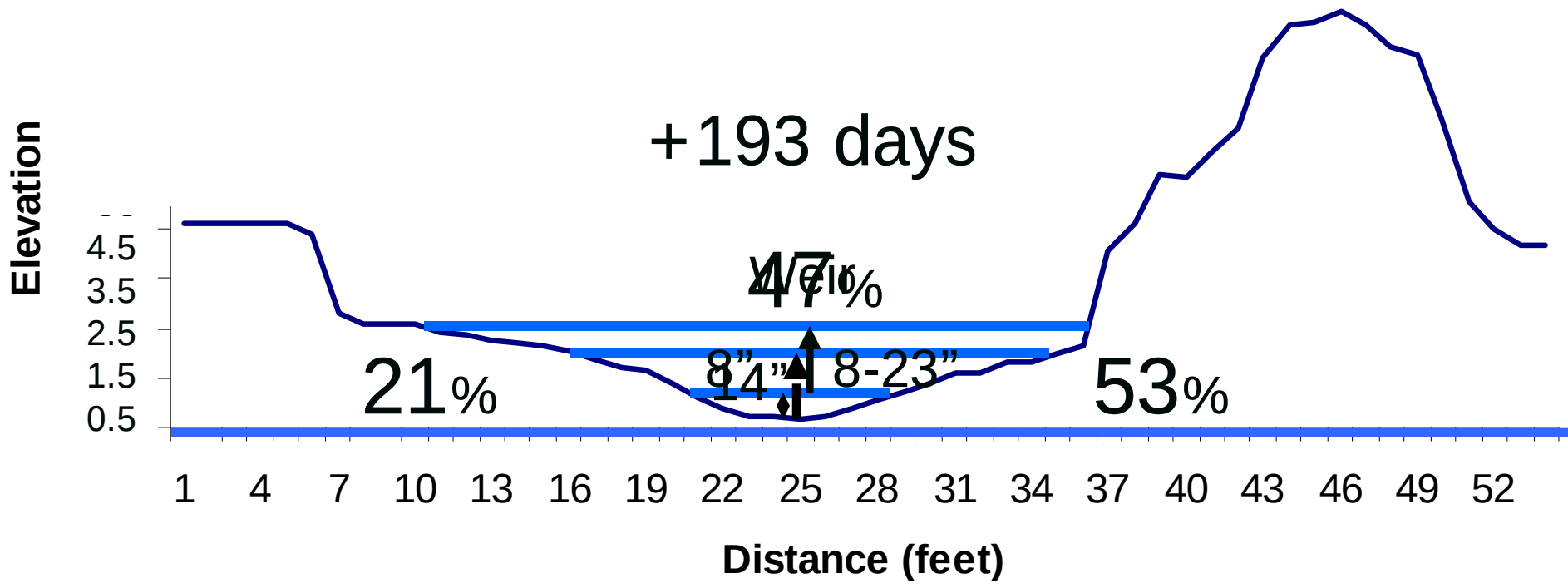
Gently sloped rollers would extend to both sides of berm

ISSUES with WEIRS

- Will lower property values
- Will actually have no effect or potentially increase property values!


Lake Tecumseh Hydrograph 2008
Recorded every 3 hours
Minimum depth of 14 inches in Widgeon Lane Canal
Very rapid draining and filling occurs
47%
WEIR
13%
Min. Boating Depth
Widgeon Canal Dry
+53%
53%
21%
Widgeon 8" deep
FISH KILL 9-26-08
FEET (MSL)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
Feb-08
Mar-08
Apr-08
May-08
Jun-08
Jul-08
Aug-08
Sep-08
Oct-08
Nov-08
Water Depth

CROSS SECTION: WIDGEON LANE CANAL



ISSUES with WEIRS

- Will increase flooding

Two Independent Studies

2004 FLOOD FEASIBILITY STUDY
(USGS)
Funded by USWFS

2008 FLOOD RISK ASSESSMENT
(URS Corp)
Funded by City of Virginia Beach

(posted on our website)

ISSUES with WEIRS

- Will negatively effect fish and wildlife

FISH KILL of Sept. 2008

Striped Mullet	53	34%
White Perch	42	27%
Spot	19	12%
Gizzard Shad	13	8%
Menhaden	10	6%
Croaker	4	3%
Largemouth Bass	3	2%
Silver Perch	3	2%
Yellow Perch	2	1%
Pumpkinseed	2	1%
Striped Bass	1	1%
Bluegill	1	1%
Common Carp	1	1%
American Gar	1	1%

ISSUES with WEIRS

- Will degrade water quality by making Tecumseh eutrophic and stagnant
- Water quality is already poor

- The Goal

ISSUES with WEIRS

- Will block Asheville Bridge Canal next
- Violates our property value and public access goals!

GAINS AND LOSSES

- Improved boating in Tecumseh
- Improved fishing in Tecumseh
- Improved water quality and SAV recovery
- Reduced turbidity-clearer water

- Added inconvenience of portaging your boat over the weir

- Friends of Back Bay
- Back Bay Restoration Foundation
- Back Bay National Wildlife Refuge
- City of Virginia Beach
- Department of Defense (Navy)
- Hampton Roads Sanitation District
- U.S. Geological Survey
- Old Dominion University
- Christopher Newport University
- Lago Mar Associates
- North American Wetlands Conservation Fund
- The Conservation Fund

Please let us hear from you!

http://www.fws.gov/northeast/virginiafield/partners/tecumseh.html

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