

Preliminary Data – Hurricane Katrina Canal Breachings, 17th Street, London Avenue and Industrial Canal

Dr. Ivor van Heerden

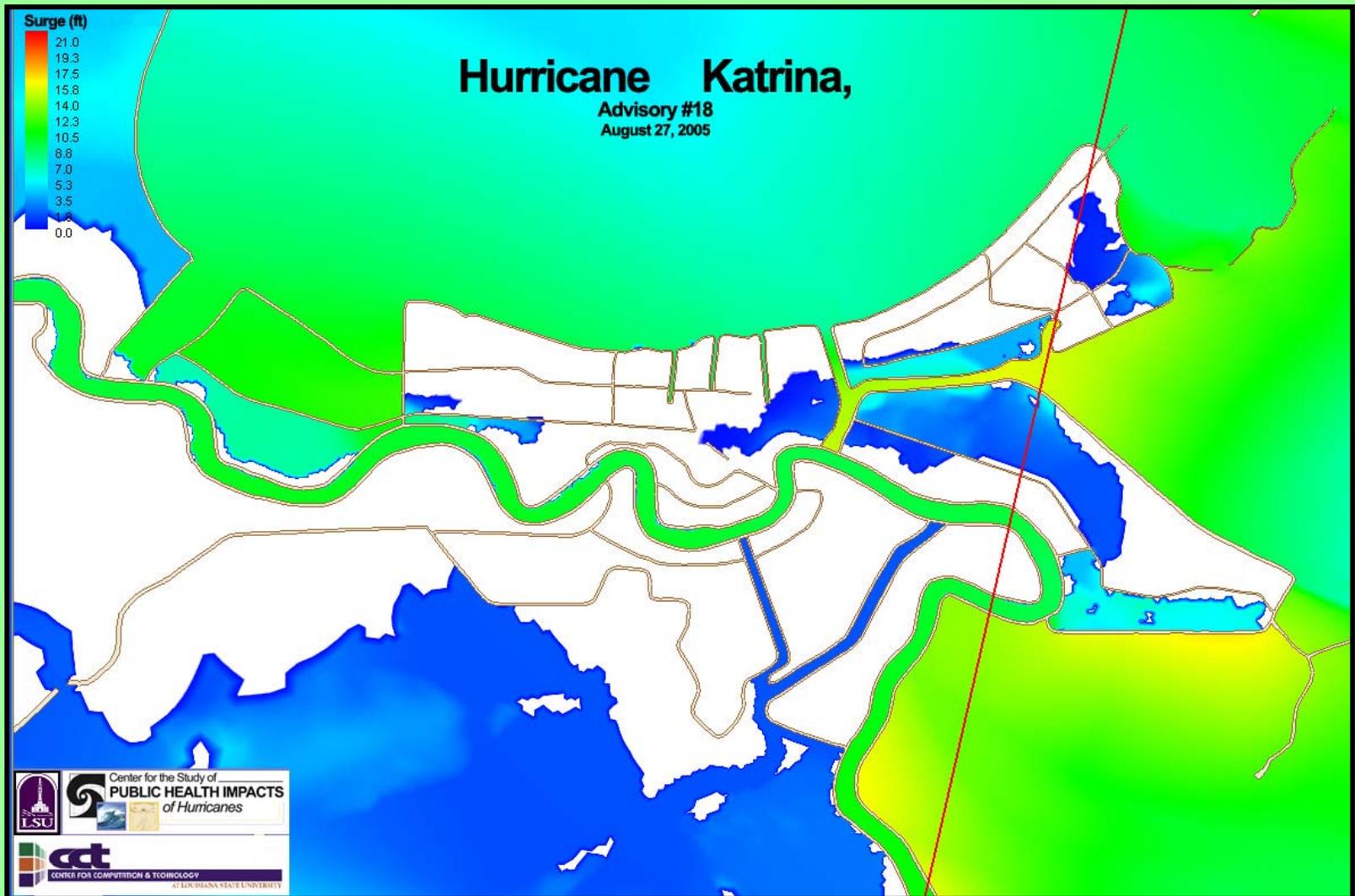
Director Center for the Study of Public Health Impacts of
Hurricanes, Deputy Director
LSU Hurricane Center
Louisiana State University



Center for the Study of _____
PUBLIC HEALTH IMPACTS
of Hurricanes

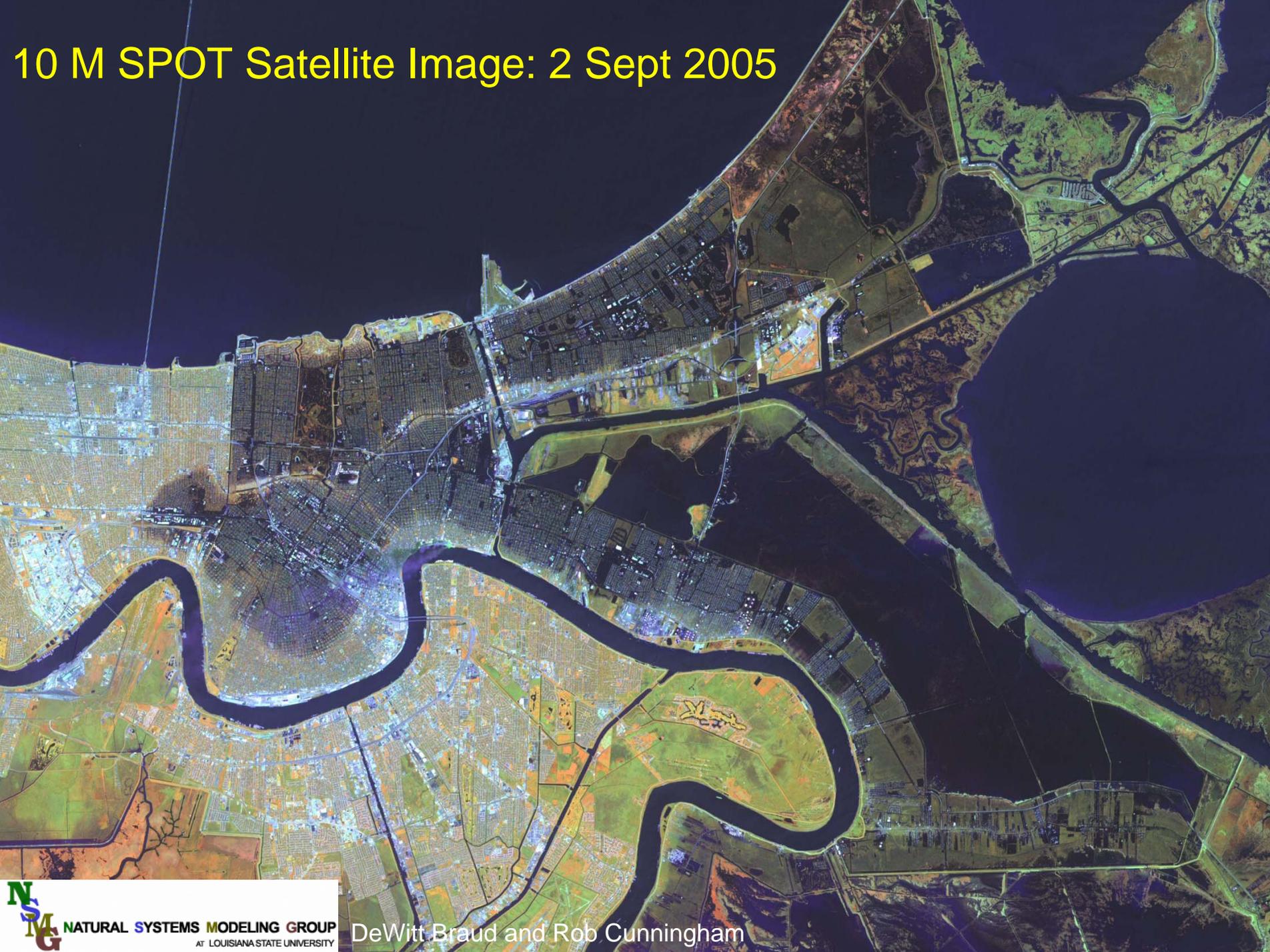


Advisory 18, Submitted Saturday 2200



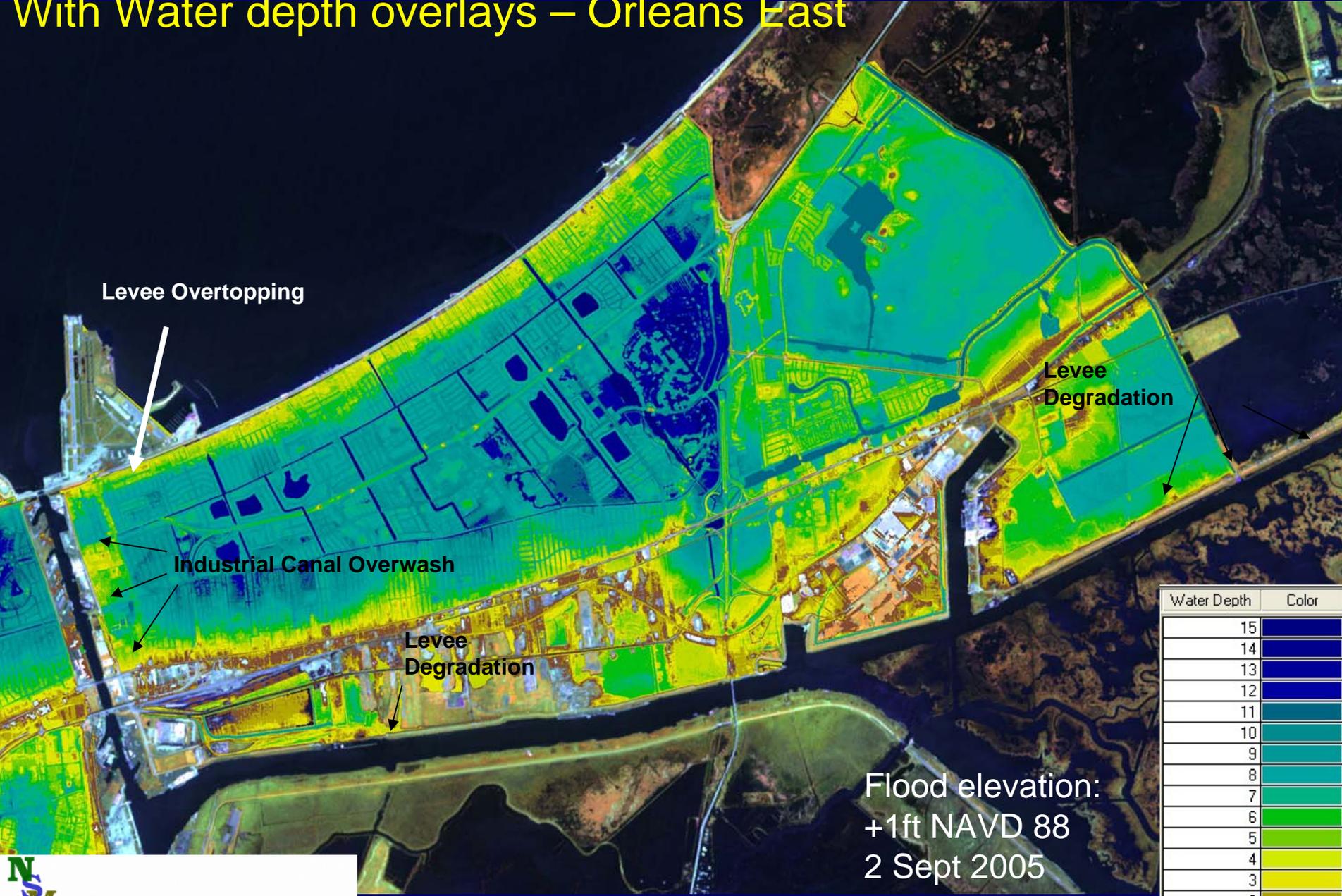
“New Orleans Will Flood”

10 M SPOT Satellite Image: 2 Sept 2005



10 M SPOT Satellite Image: 2 Sept 2005

With Water depth overlays – Orleans East



Water Depth	Color
15	Dark Blue
14	Blue
13	Light Blue
12	Teal
11	Greenish Teal
10	Teal
9	Light Green
8	Green
7	Light Green
6	Yellow-Green
5	Yellow
4	Light Yellow
3	Yellow
2	Light Brown
1	Dark Brown



6 2:56 PM





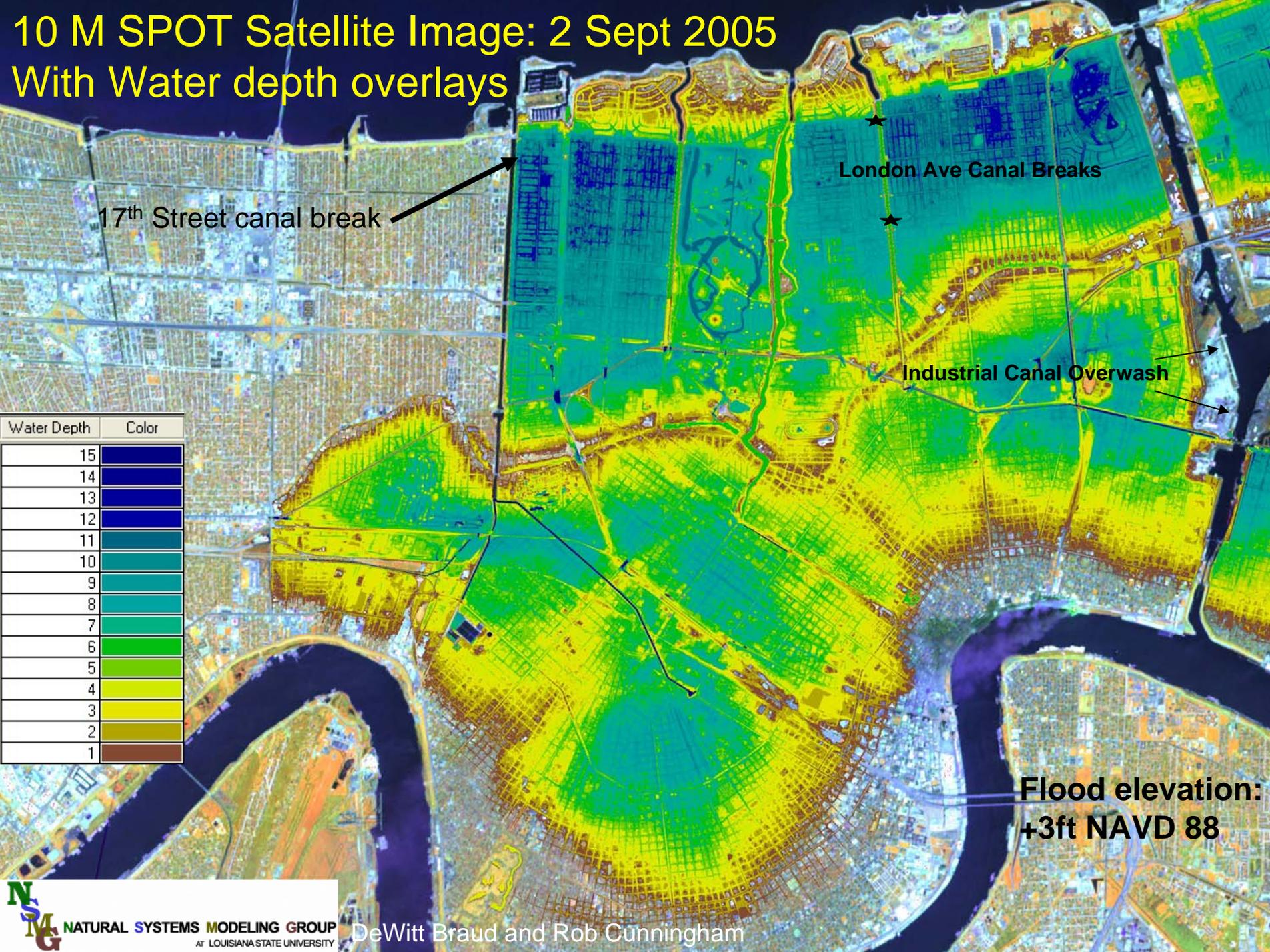
Scour Trench from
Overtopping for 3 hours



19 1:48 PM

10 M SPOT Satellite Image: 2 Sept 2005

With Water depth overlays



17th Street canal break

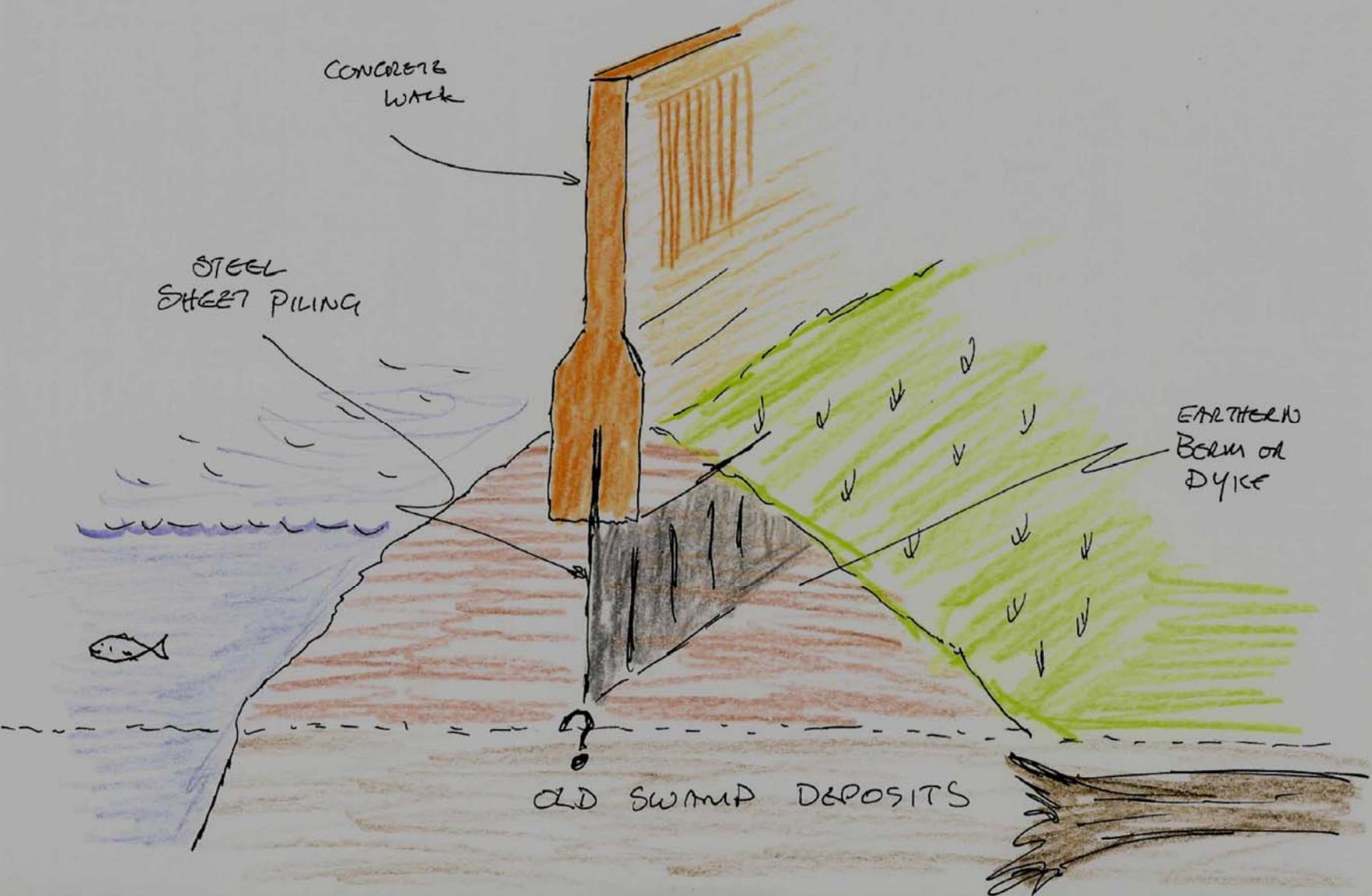
London Ave Canal Breaks

Industrial Canal Overwash

Flood elevation:
+3ft NAVD 88

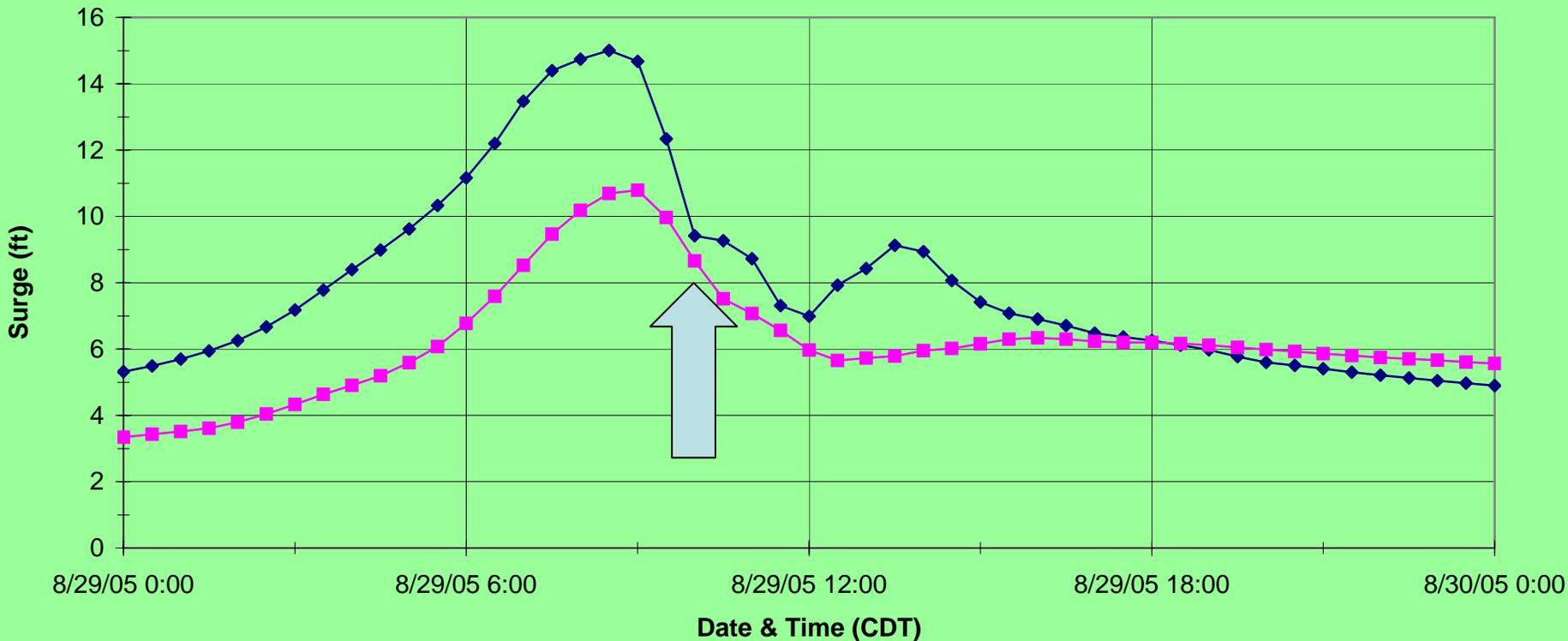
Water Depth	Color
15	Dark Blue
14	Blue
13	Dark Teal
12	Teal
11	Light Teal
10	Greenish Teal
9	Green
8	Light Green
7	Yellow-Green
6	Yellow
5	Light Yellow
4	Yellow
3	Light Yellow
2	Yellow
1	Brown

General Levee Construction Preliminary Data



17th Street Canal Breach

Hurricane Katrina Surge at the Industrial Canal & Lake at the 17th Street Canal
IC-Peak at 0830 AM; Lake Peak 0900 AM



◆ Ind. Canal N216818 ■ Lake @ 17th Canal N206324

17th Street Canal – Note displaced levee section in middle of the breach, which moved 35 feet

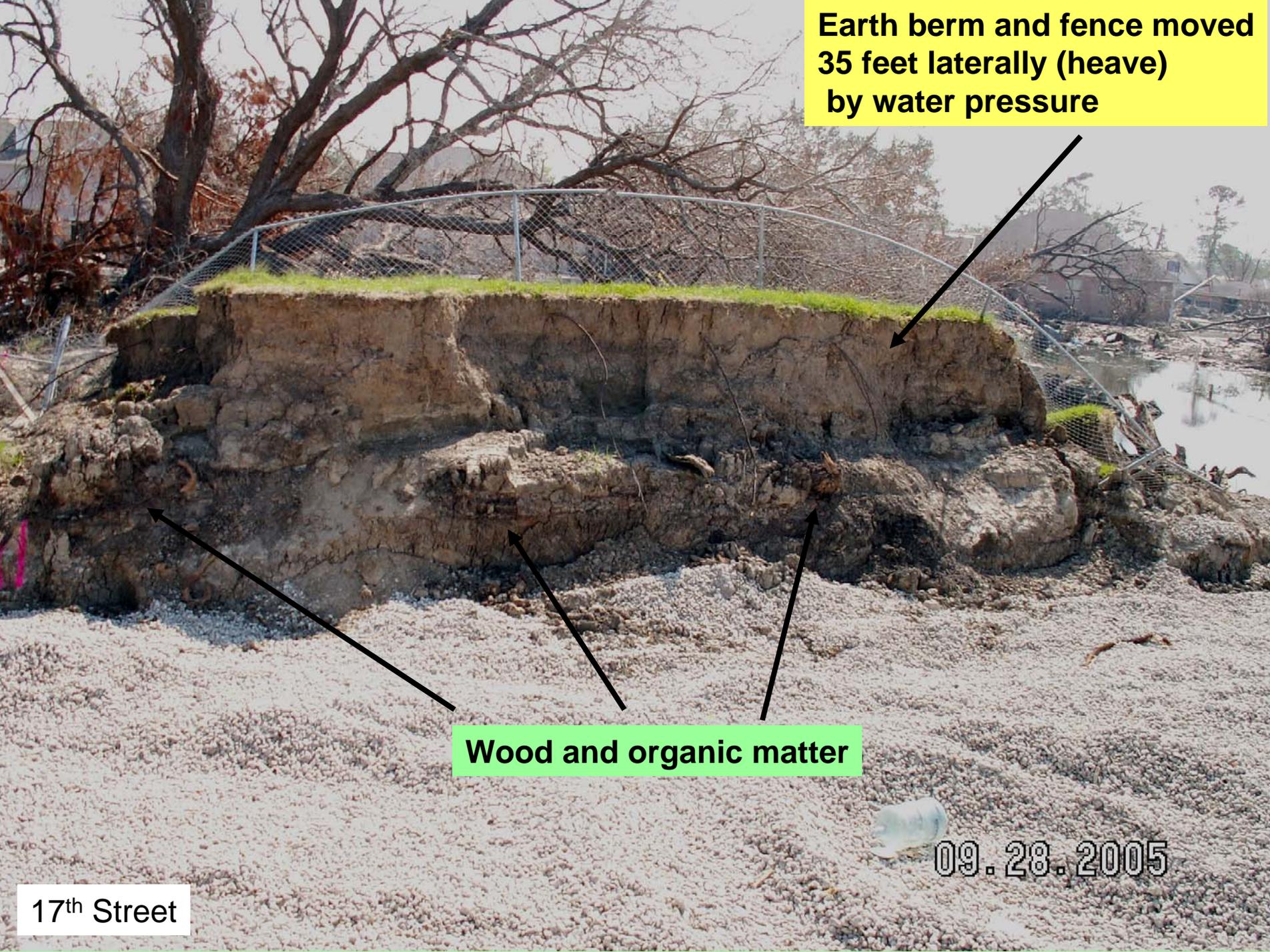




08/30/05



**Earth berm and fence moved
35 feet laterally (heave)
by water pressure**



Wood and organic matter

17th Street

09.28.2005

17th Street Canal - 'Heaved' yard
behind levee wall that moved
35 feet laterally



6 11:34 AM

Old swamp cyprus stumps
exposed by scour

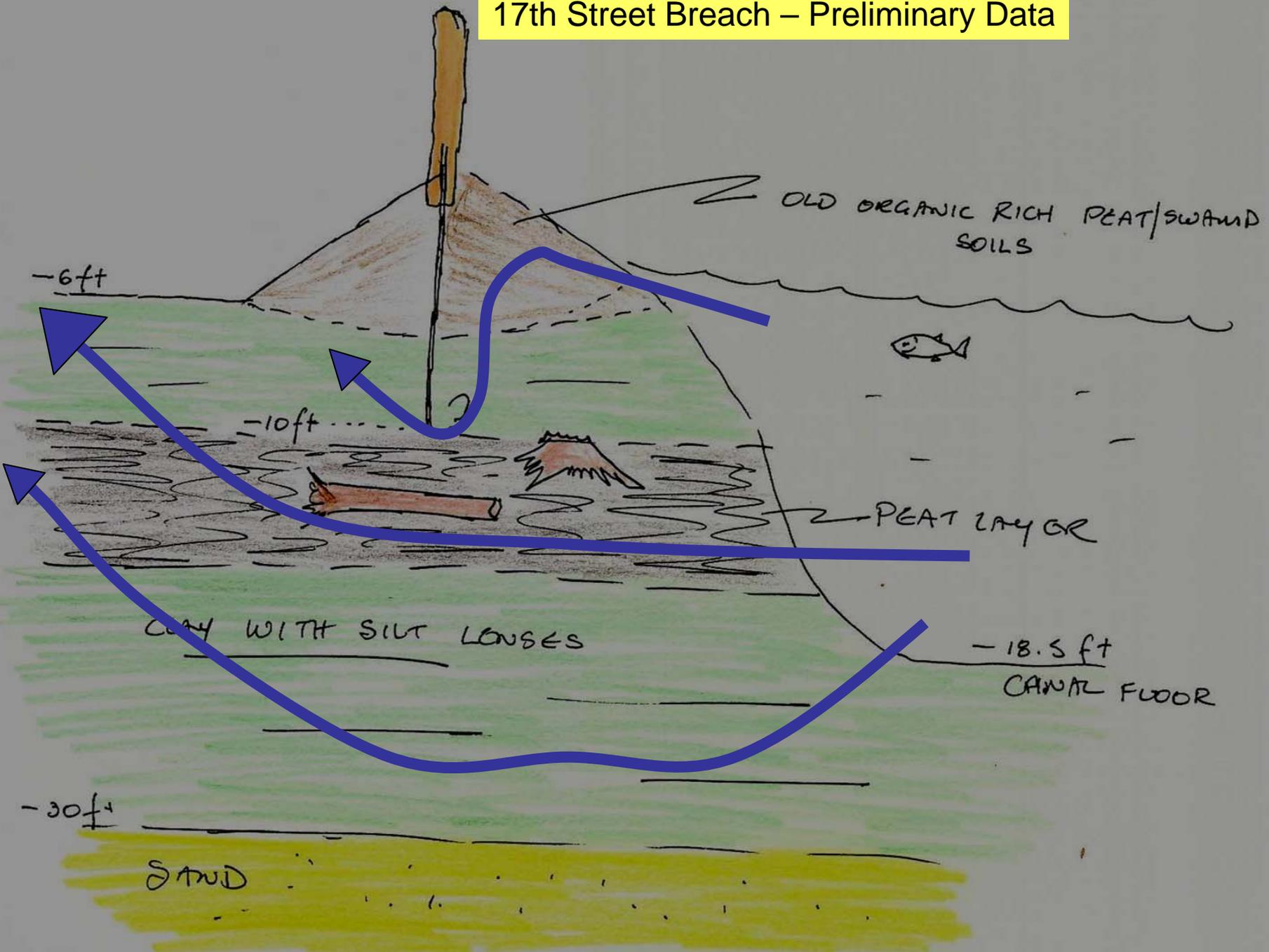


09.28.2005

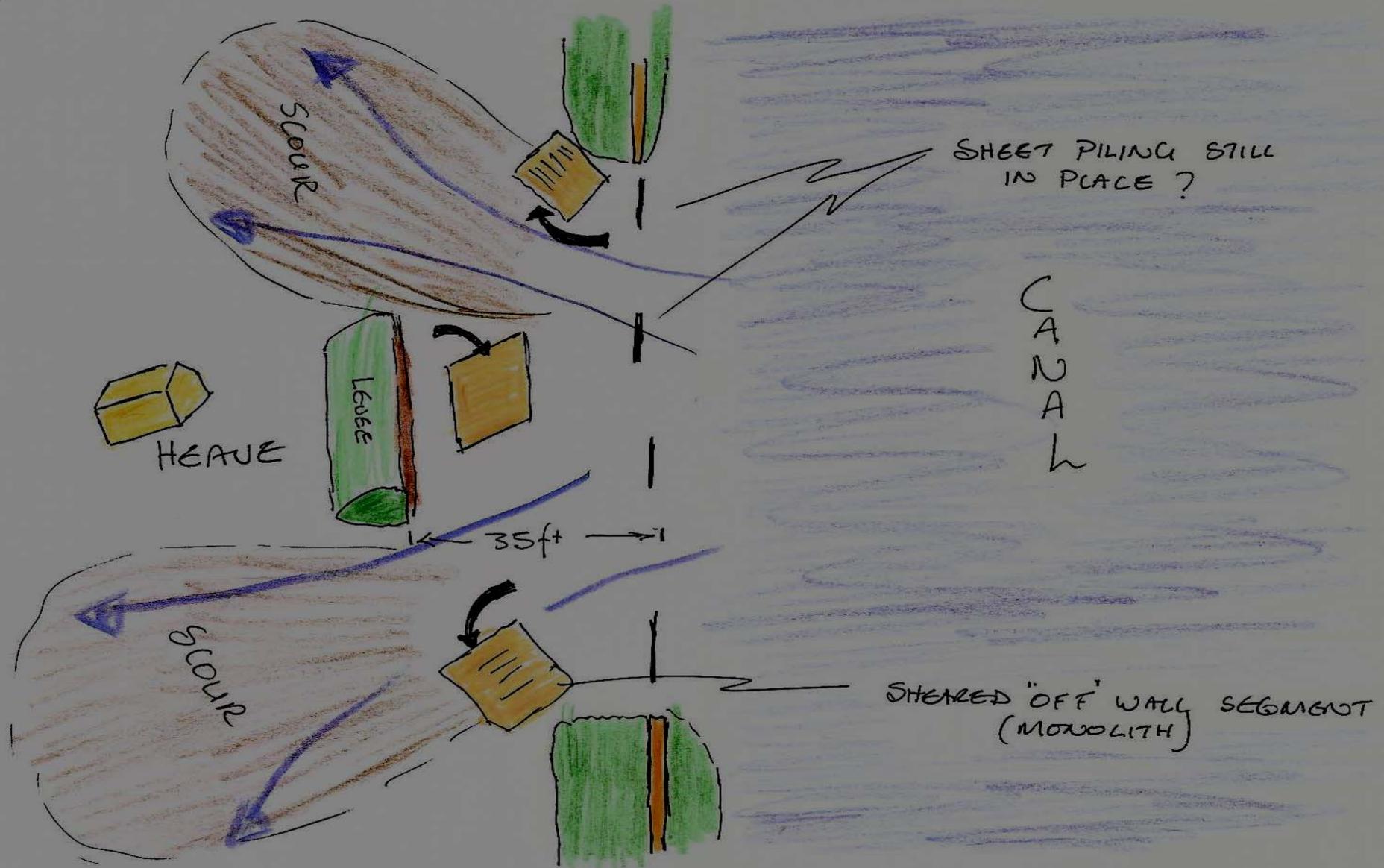


19 3:56 PM

17th Street Breach – Preliminary Data



17th Street Canal - Aerial Sketch Preliminary Data



London Ave Canal – Filmore Breach



SEP 7 2005



Clubhouse (as built) at base of levee soil embankment - London Ave Canal west breach. Note pine tree location on left.

**Club house and pine tree after heave –
London Ave Canal west breach, rose 6-8 feet!**



Daniel Cantrell

London Ave Canal bowed wall segments near Filmore Road, east side of canal



28 12:37 PM

London Ave Canal – Large ‘sand boil’ at base of levee soil embankment, east side



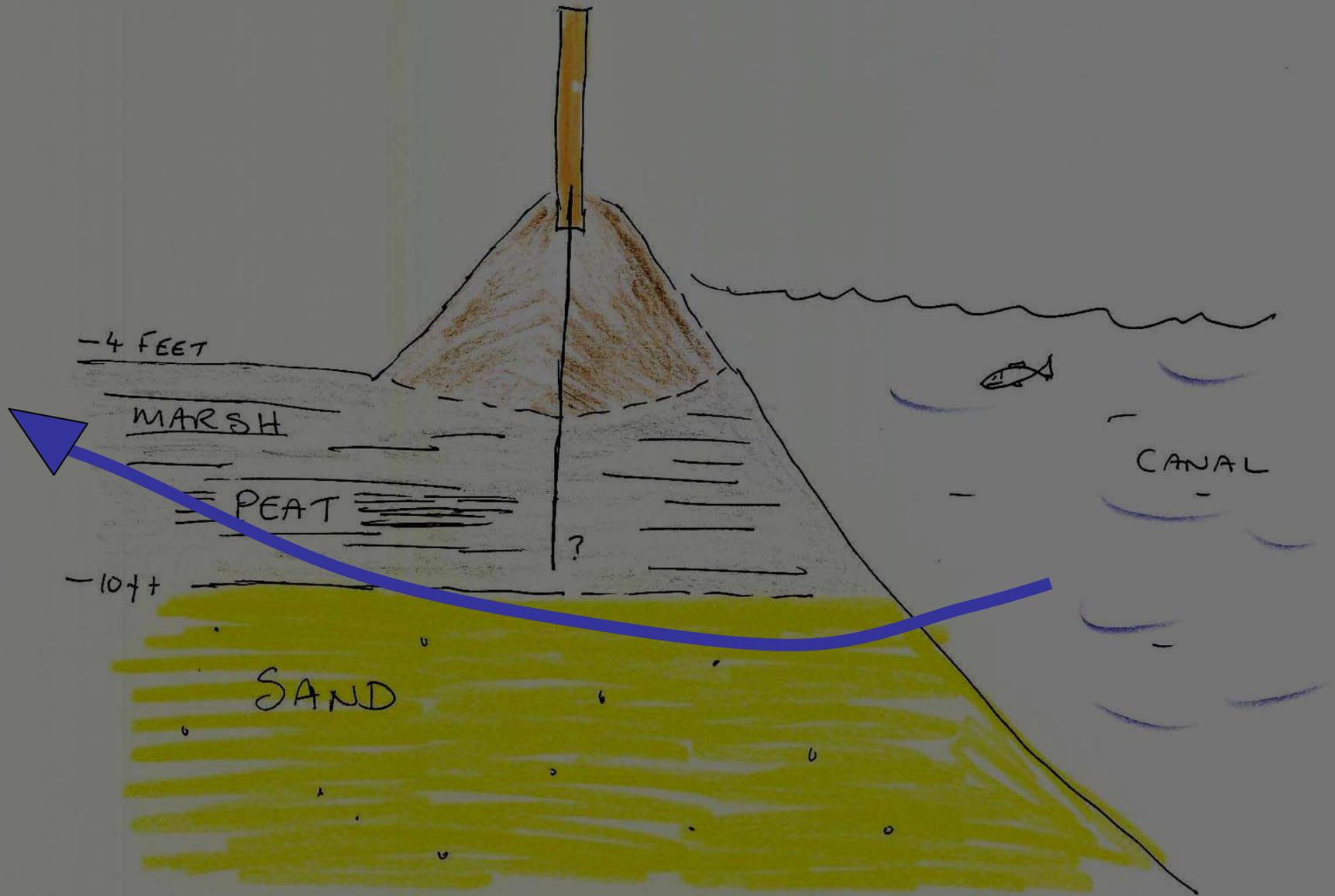
14 1:03 PM

London Ave Canal – Heaves In yard,
tilted flower bed and buildings, east side.



14 1:03 PM

London Ave - Filmore Breach – Preliminary Data



Mirabeau Break on London Ave.



LOTS OF SAND!

10.06.2005



H75

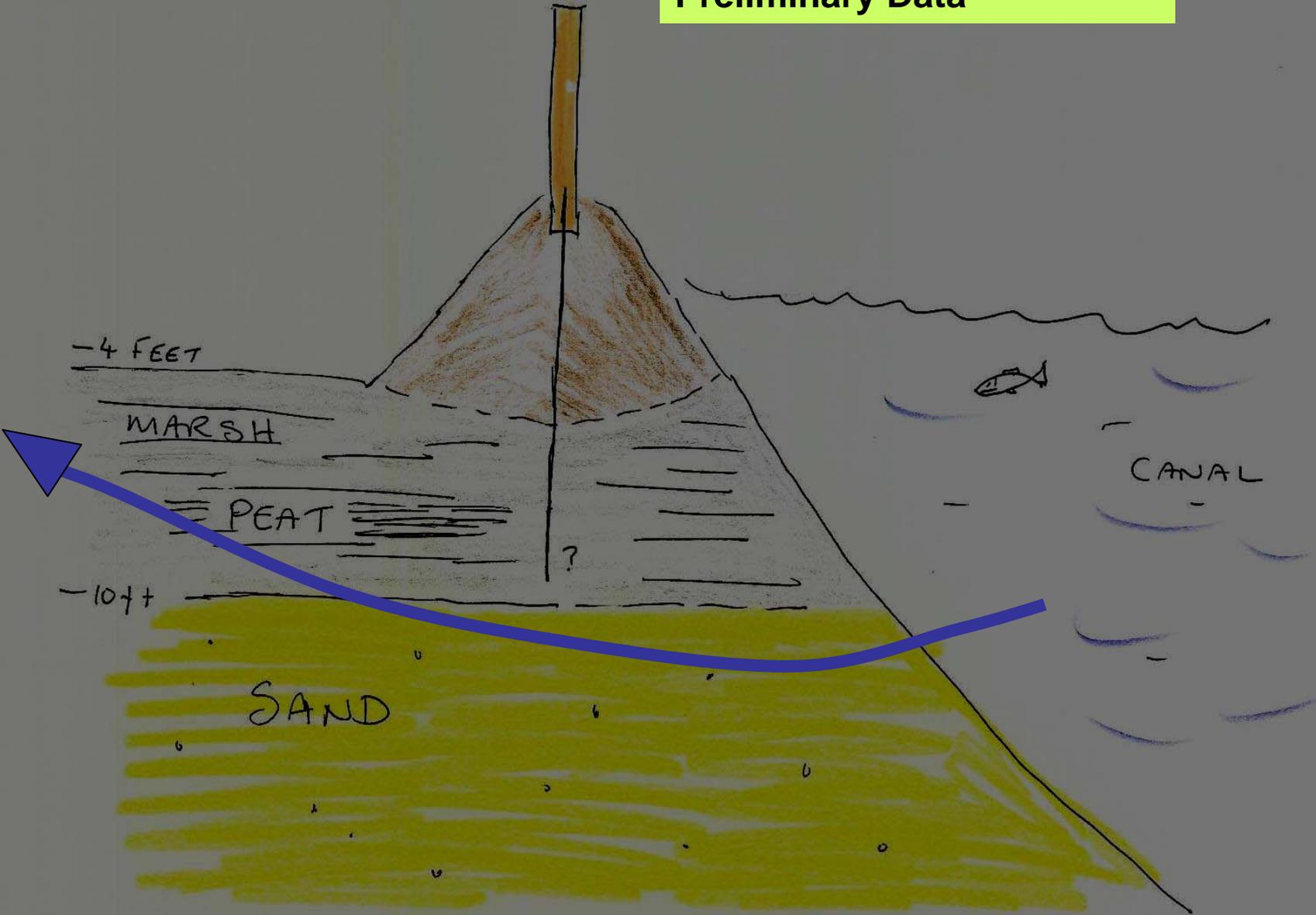
SEP 15 2005



Blowout hole?

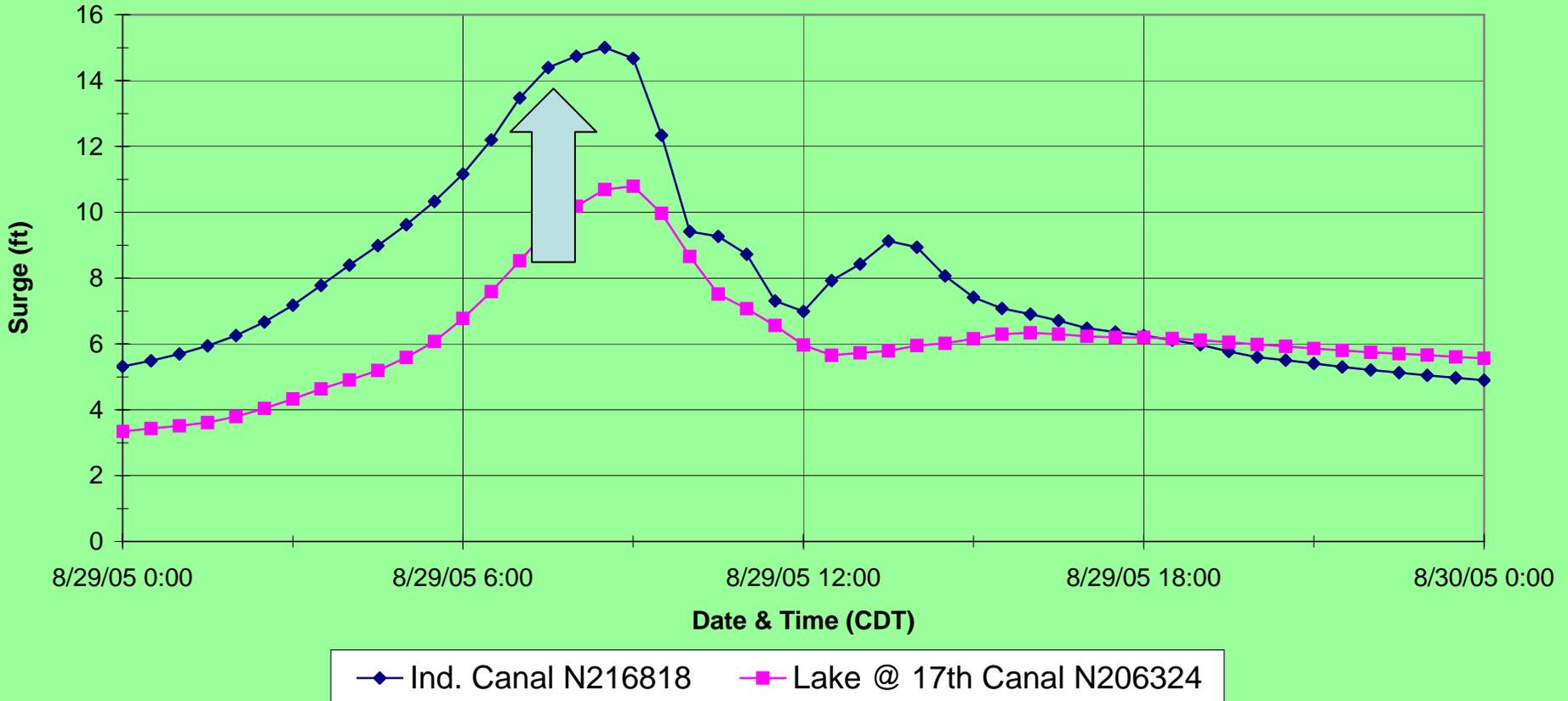
SEP 15 2005

Mirabeau Breach – Blowout Preliminary Data



Industrial Canal Breachings

Hurricane Katrina Surge at the Industrial Canal & Lake at the 17th Street Canal
IC-Peak at 0830 AM; Lake Peak 0900 AM



4 Sept 2005



4 2:35 PM

Levee Failure on East Side of Industrial Canal



15 Sept 2005



15 10:58 AM



20 1:06 PM



20 1:16 PM

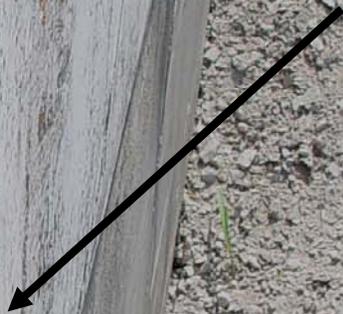
Scour Trench from overtopping of levee





20 12:52 PM

Paint from barge?



20 1:32 PM



Note: 'R' bars bent horizontal while wall at 45 degree angle – barge bottom move across after wall collapsed?

20 1:36 PM

Scour Trench

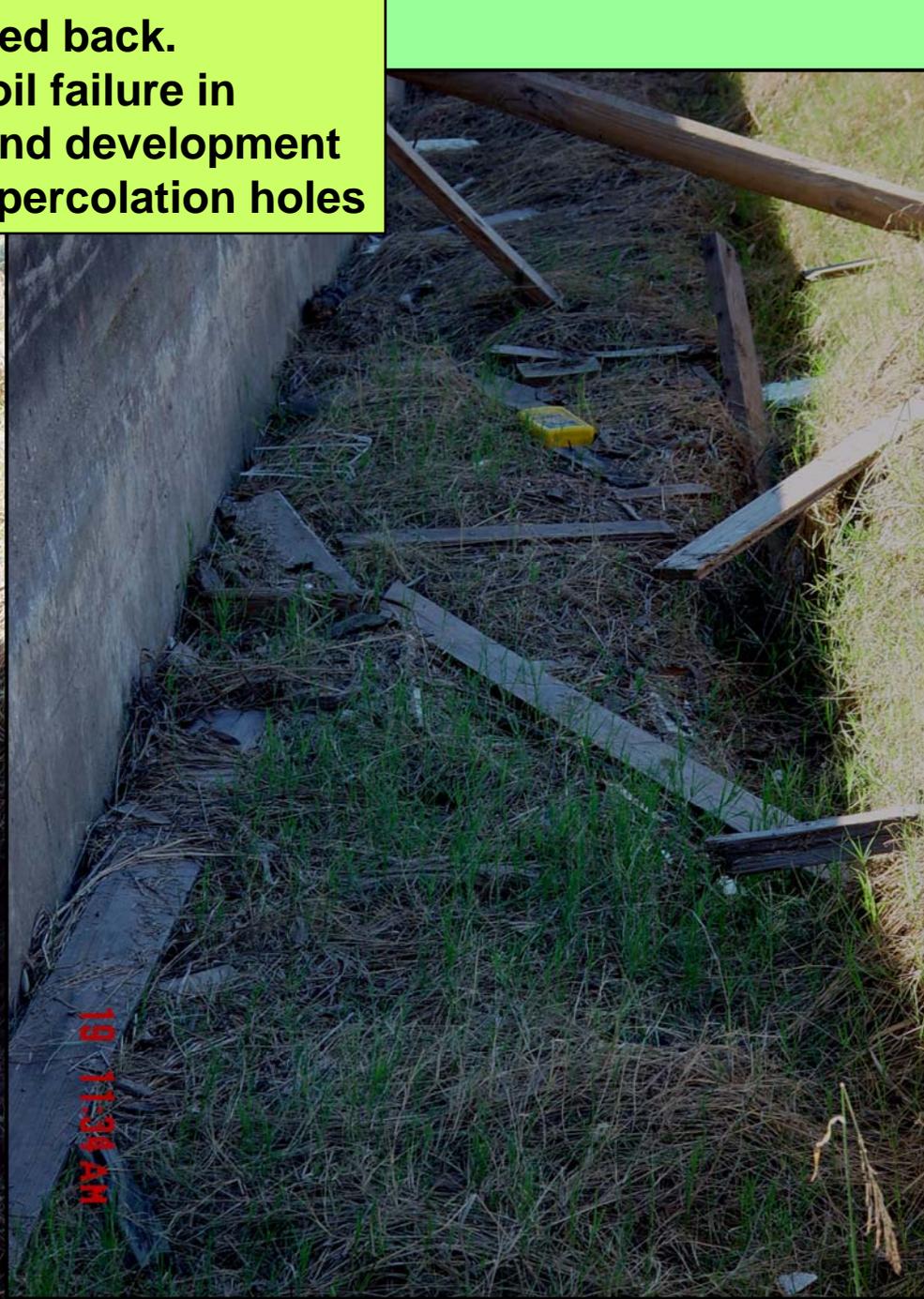
Curved wall – why?

Embankment failure



19 11:31 AM

**Levee wall tilted back.
Cracks and soil failure in
front of wall and development
of downward percolation holes**

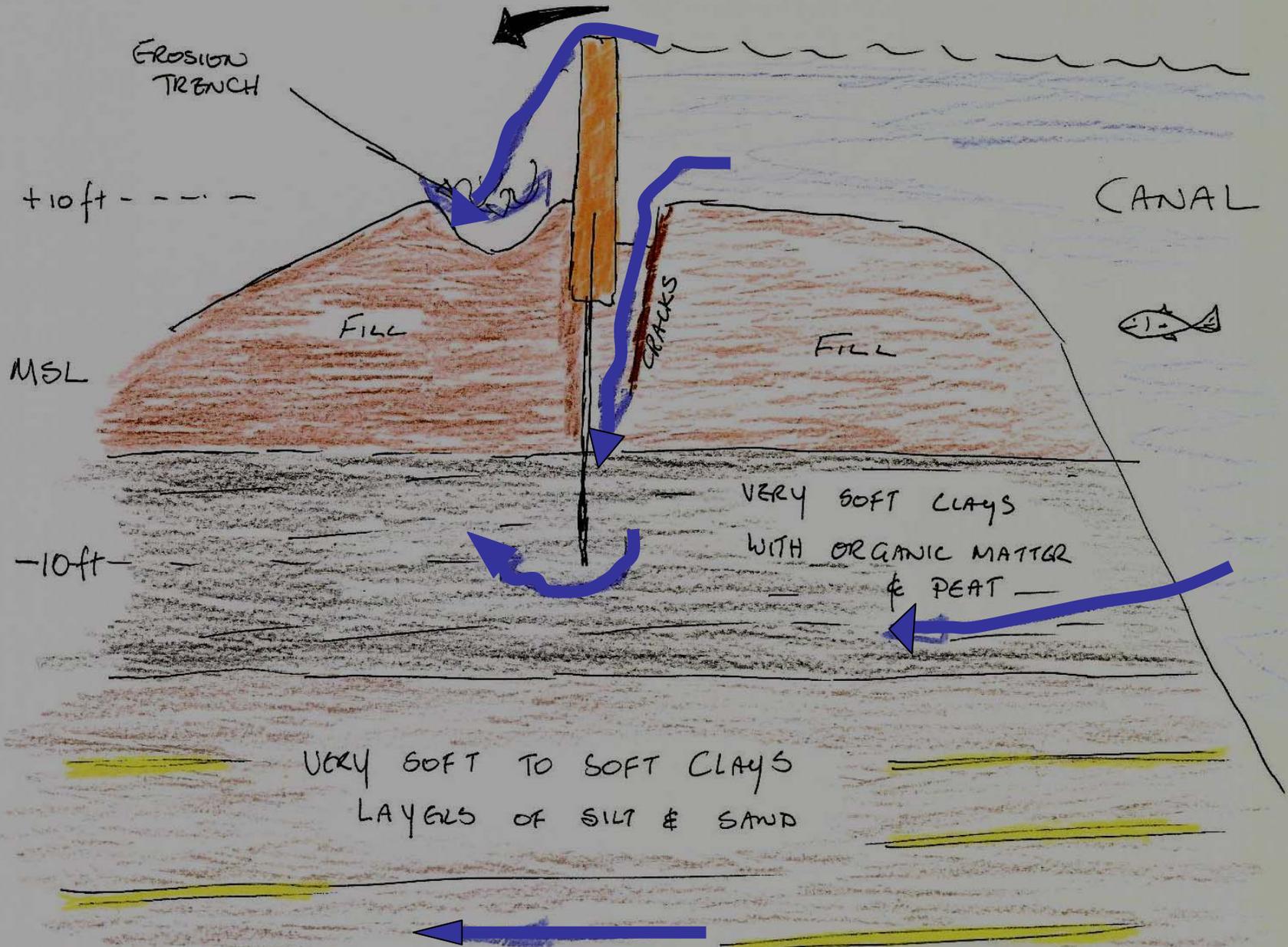


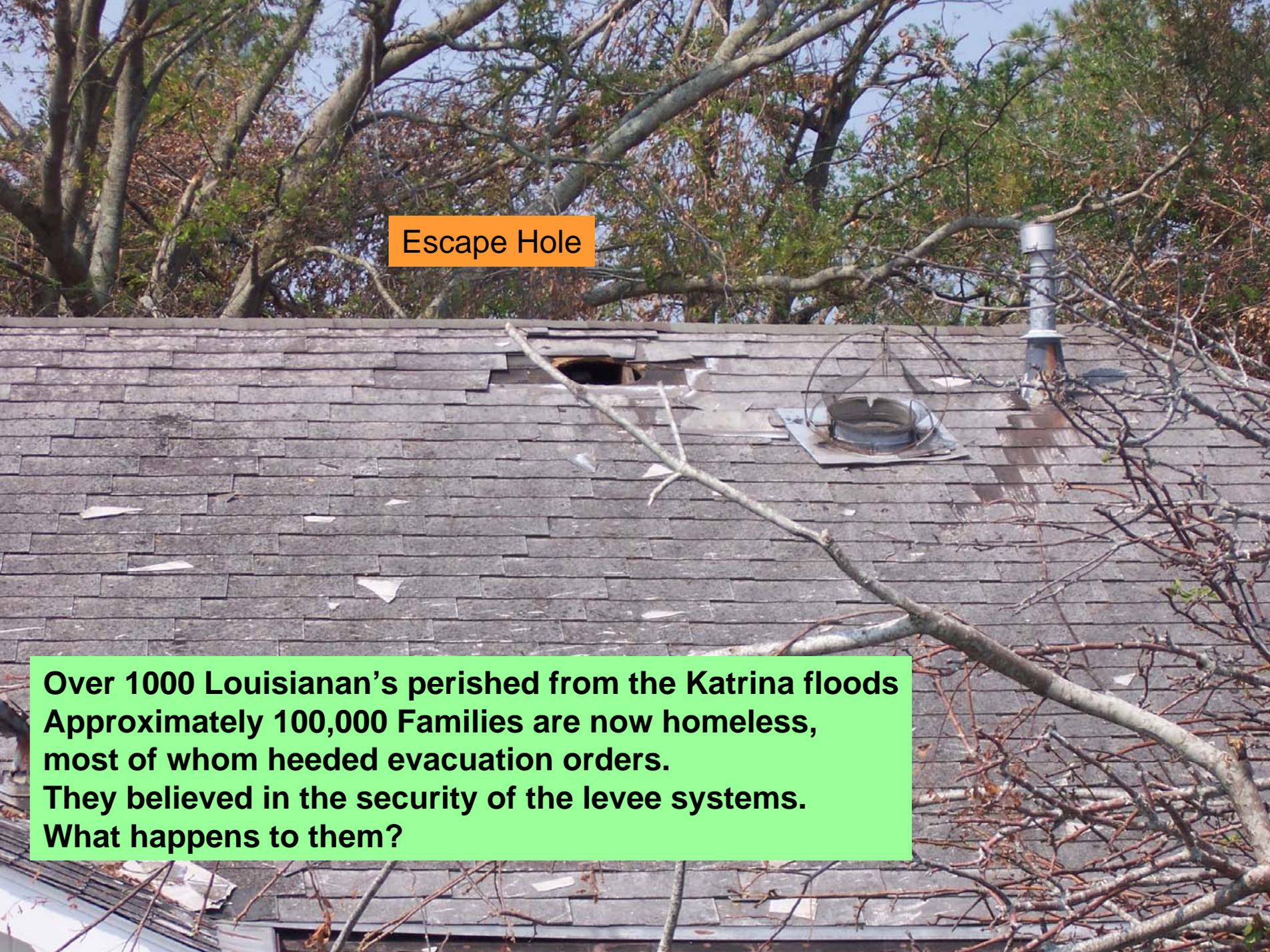
Cyprus tree stump from
Old swamp floor



20 1:19 PM

Industrial Canal Levee failure – preliminary data



A photograph showing a grey shingled roof with significant damage. A large hole is visible in the center-left, with a dark interior. To the right of the hole is a metal vent pipe with a circular metal cage around its top. The roof is surrounded by bare tree branches and some green foliage in the background. An orange text box is positioned above the hole.

Escape Hole

**Over 1000 Louisianan's perished from the Katrina floods
Approximately 100,000 Families are now homeless,
most of whom heeded evacuation orders.
They believed in the security of the levee systems.
What happens to them?**