

# Fox River PCB Sediment Remediation Site, Wisconsin

Introduction to Environmental Science  
March 8, 2012

James Hahnenberg

Photo from Wikipedia

# Todays discussion

- Fox River - PCBs
- Progress
- Results
- Other stuff

# Fox River PCB cleanup

- Largest environmental sediment cleanup: 8 million cubic yards
- ~\$800 million cleanup cost
- PCBs: primary risk driver
- Lower PCB levels in fish in completed areas

# It takes a team

- WDNR technical lead & EPA enforcement lead
- *Superfund*
- Responsible parties pay for cleanup
- Oversight by WDNR/EPA



Agency  
oversight  
team

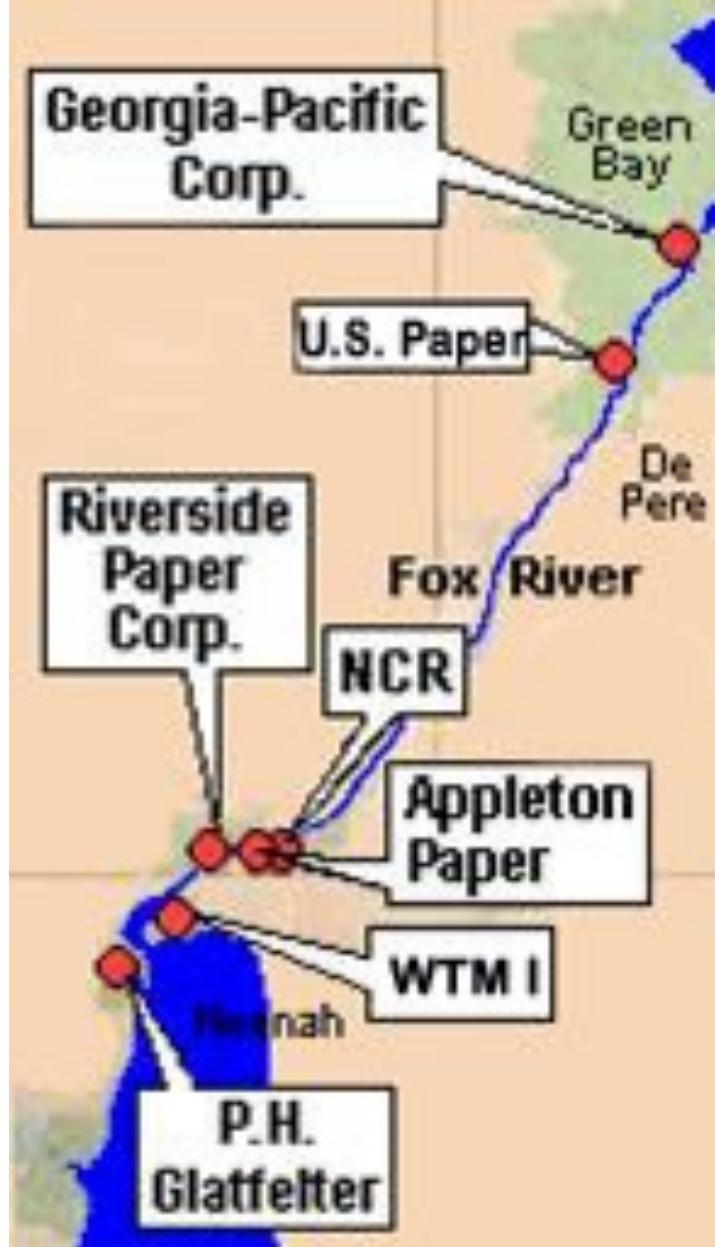
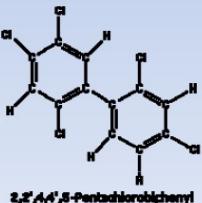
Photo courtesy of Boldt

# Carbonless copy paper production 1954–1971



## Site Background

Between 1954 and 1971, NCR Corporation and Appleton Papers sold carbonless copy paper made with polychlorinated biphenyls (PCBs).



Modified from Green Bay Press Gazette



Black Crappie



Bluegill



Brown Trout

Monitoring (ecological)



Carp



Channel Catfish



Chinook Salmon



Northern Pike



Rock Bass



Rainbow Trout



Smallmouth Bass



Splake



Sturgeon

Monitoring (human health)



Walleye



White Bass



White Fish



White Sucker

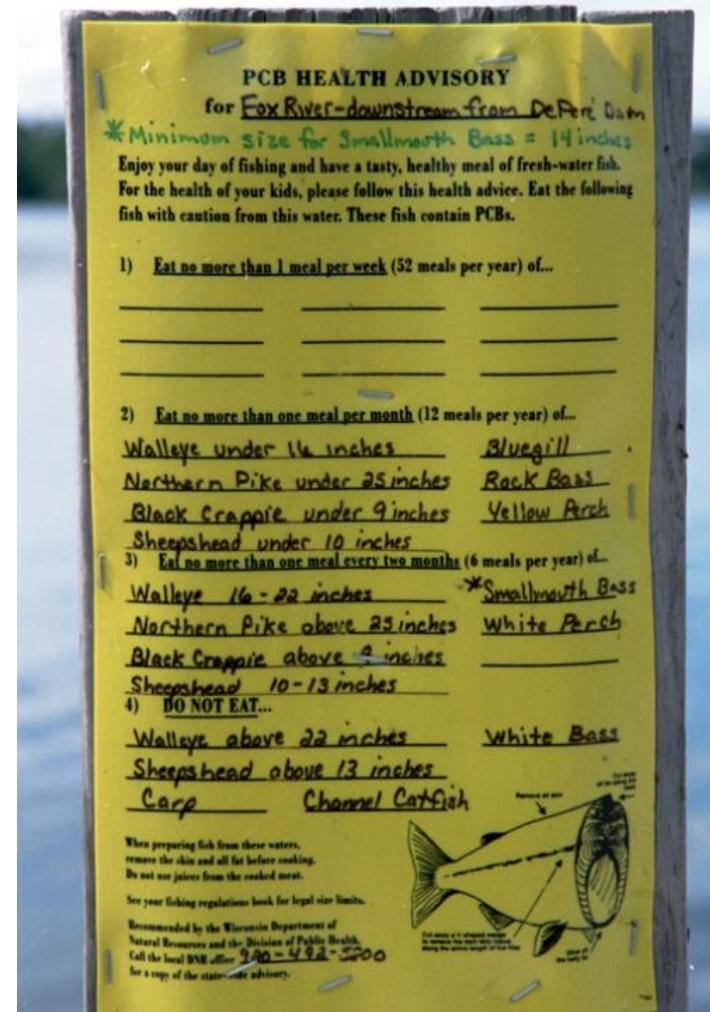


White Perch



Yellow Perch

# Fish Advisories (since 1976)

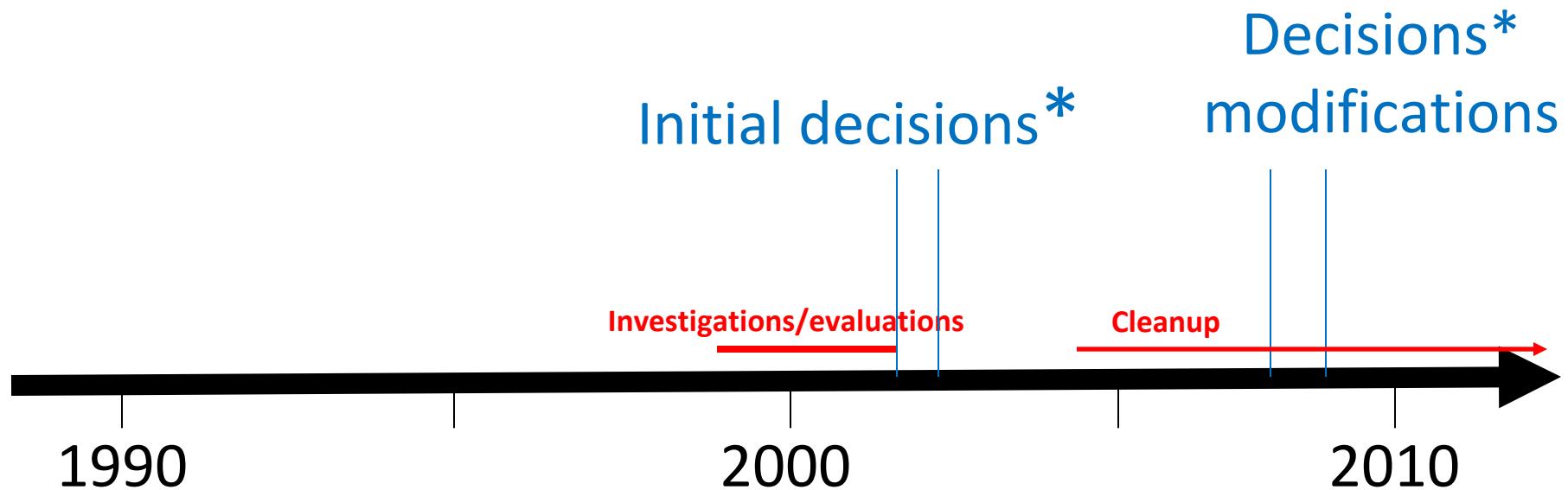


# Fox River & Green Bay Fishers

- ~50,000 fishers
- 2,000-5,000 eat Fox River & Green Bay fish



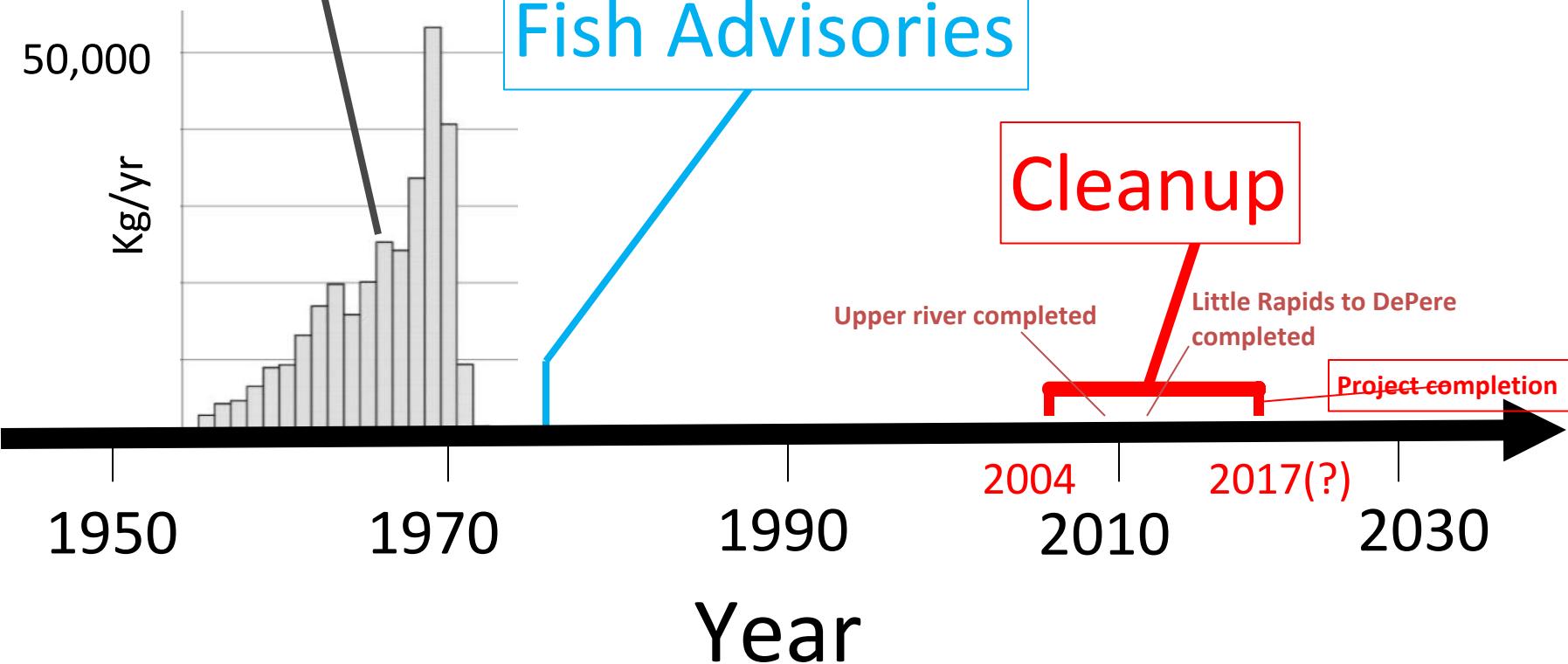
# Superfund timeline



\* Record of Decision (i.e., "ROD")

# Site history

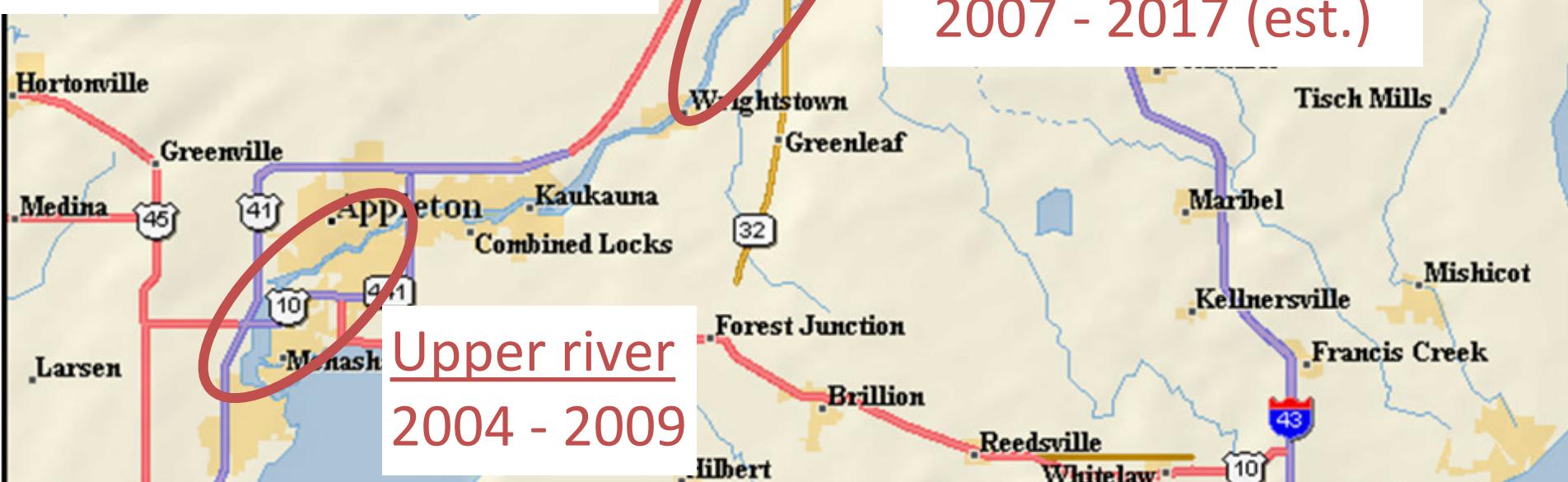
PCB discharges\*



\* From: WDNR, 1999, Technical Memorandum 2d.

# Cleanup

1. Dredging/disposal
2. Capping
3. Monitored Natural Recovery



 **DELORME**

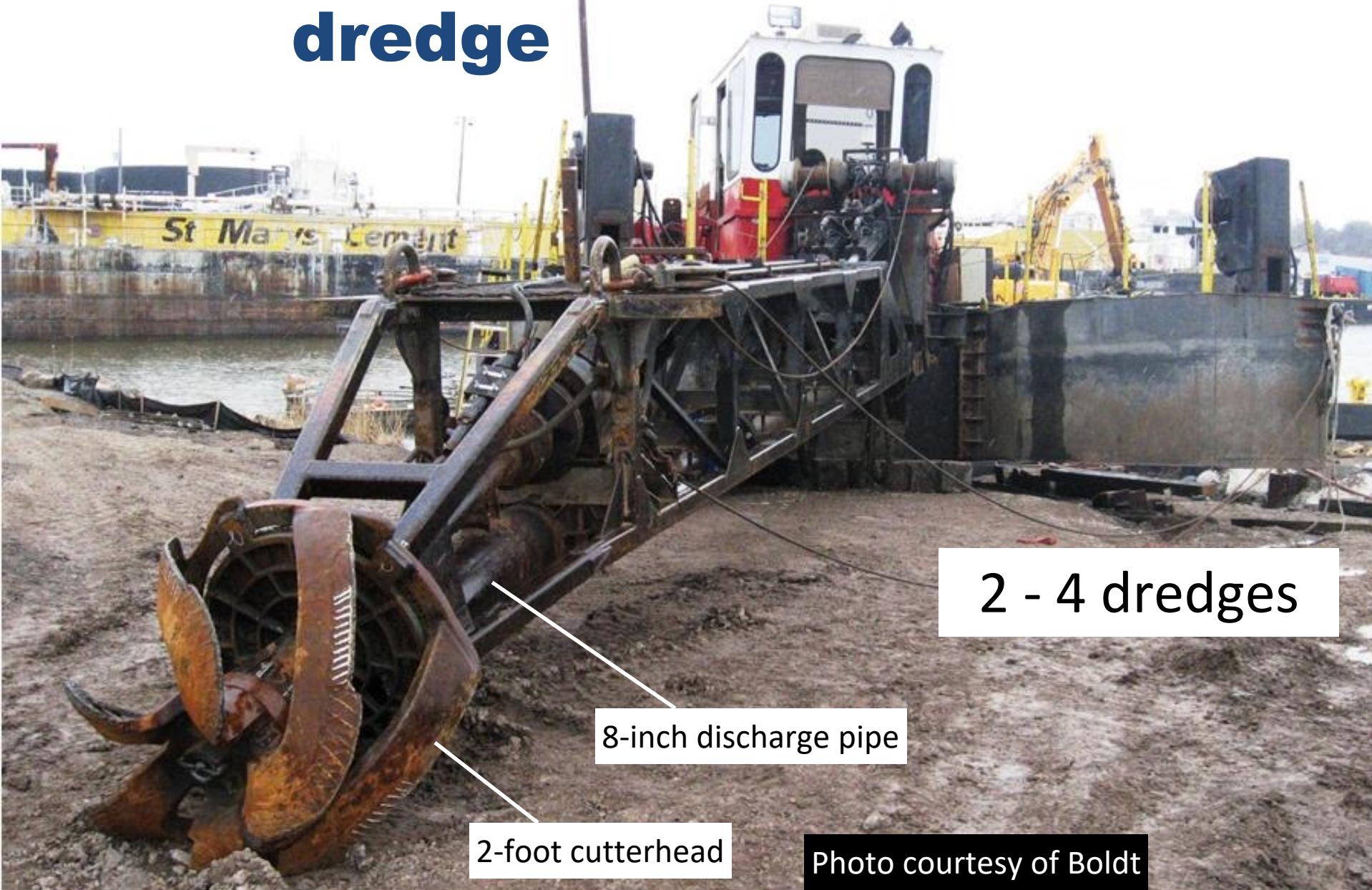
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MN (3.2° W)



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0 2 4 6 8 10 12  
Data Zoom 8-3

# Hydraulic cutterhead dredge



# Mud/water separation



Courtesy of the Fox River LLC.

# Sediment disposal



Photo courtesy of Boldt

# Caps: sand placed over sediment

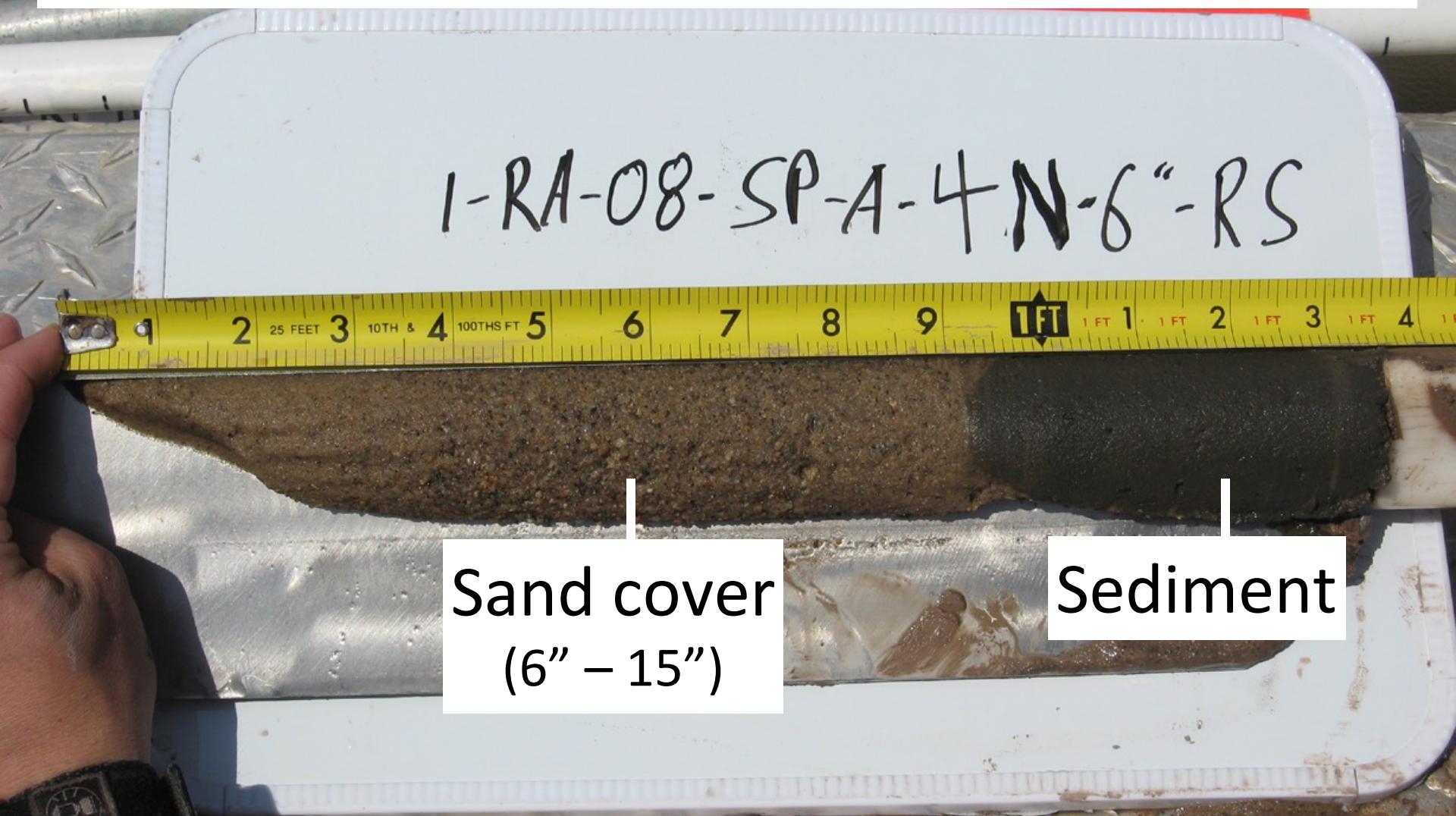


Photo courtesy of Boldt oversight team

# Armor stone placement (7" – 18")



Photo courtesy of Boldt oversight team

9/8/2011  
0U3-CAB3B-1-1-612  
7 1/2 " Gravel

## Armor stone



0.75 inch stone

Photo courtesy of Boldt oversight team

# Restoration



Geotextile tubes Separates  
mud from water

During cleanup

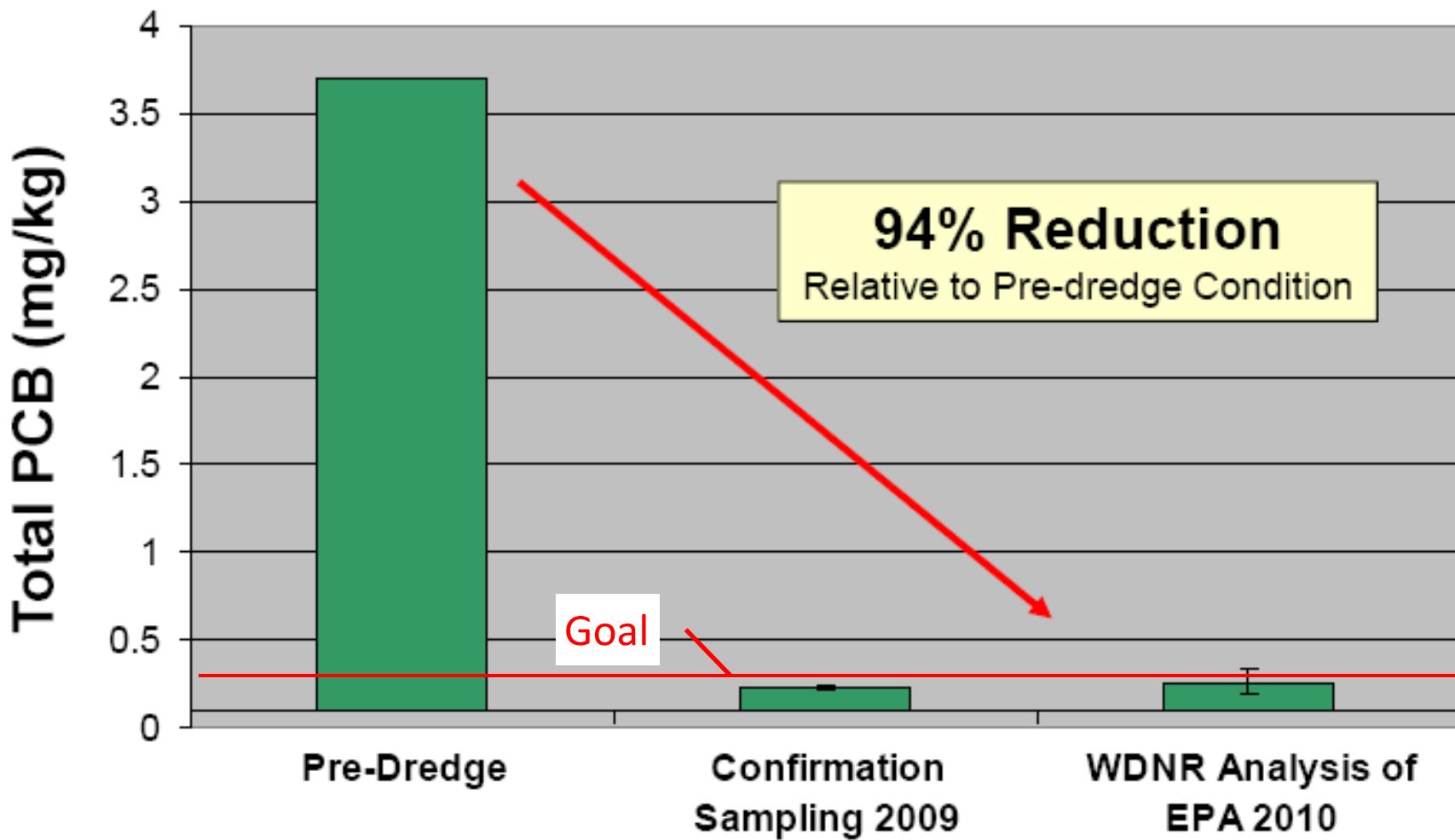


# Environmental results - upper river



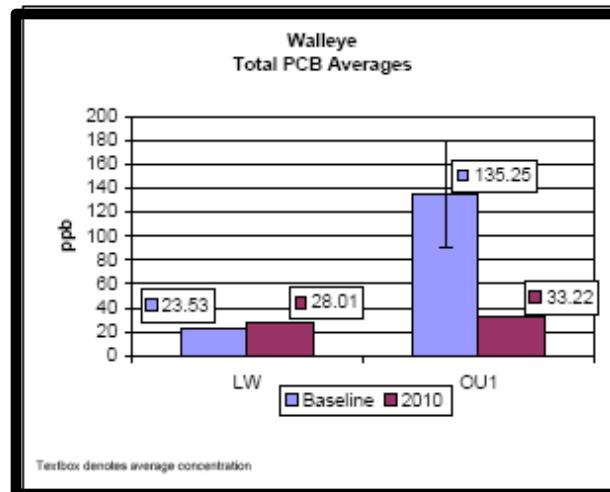
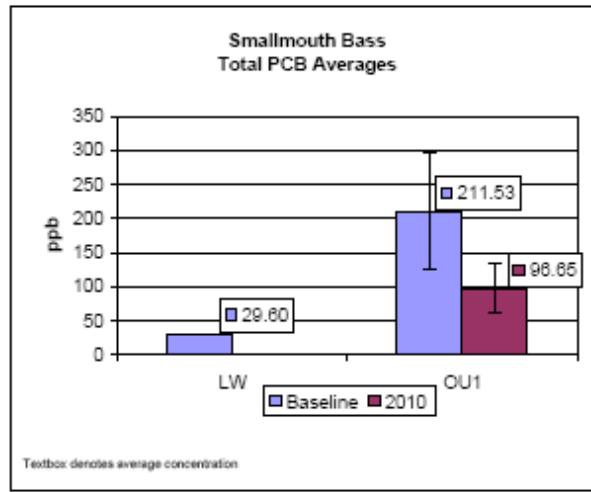
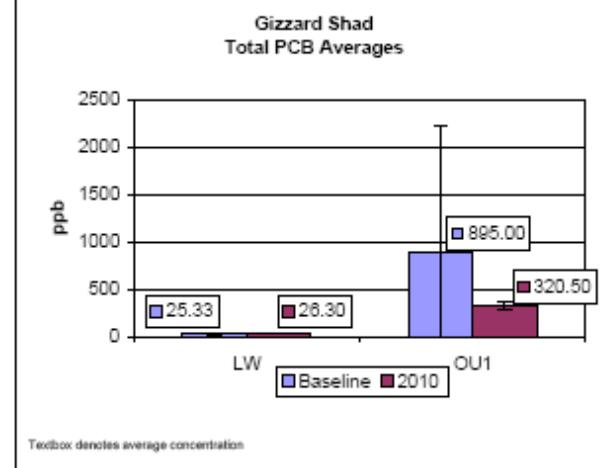
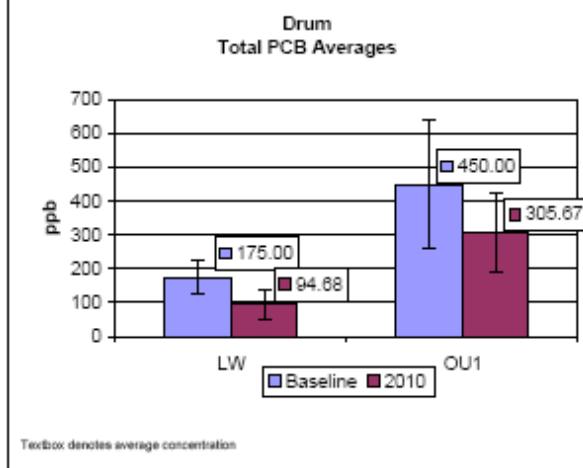
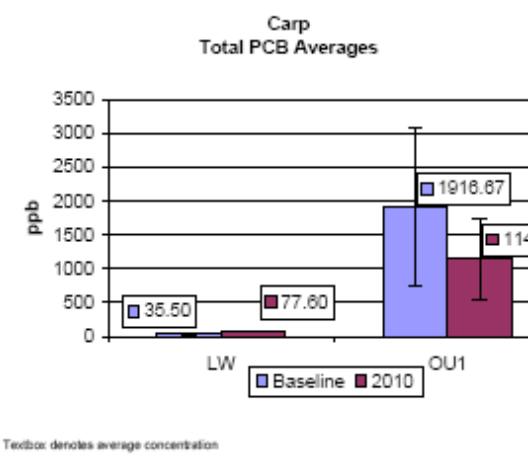
Photo from Ann Schell

# Total PCB Concentration in Surface Sediments Little Lake Buttes Des Morts, WI (Upper river)



From: Boldt oversight team

# PCBs in upper river fish

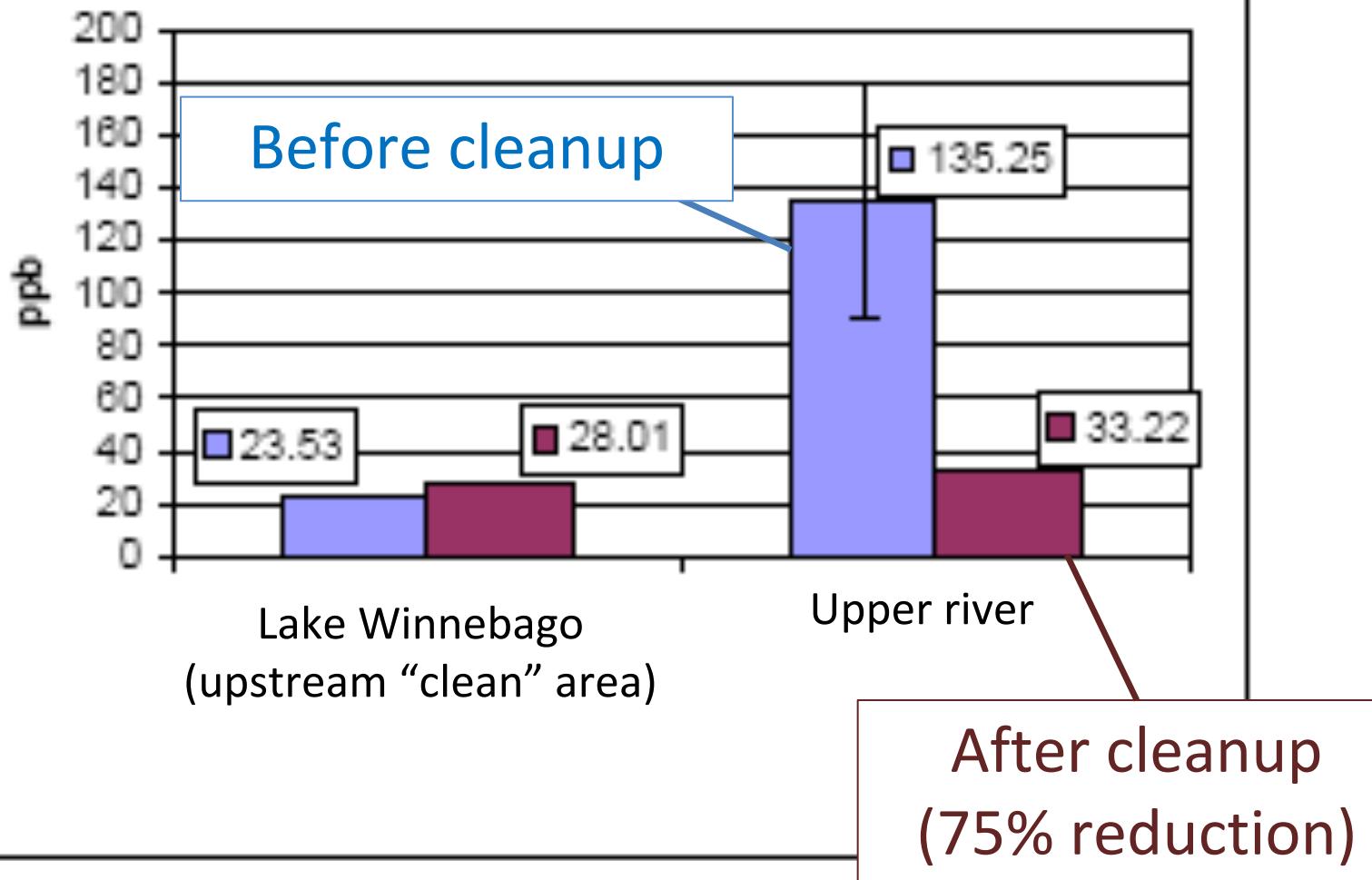


Next slide

From: GW Partners and LLC, Preliminary draft, Year Zero  
Summary Report, Lower Fox River OU1, May 2011.

GW Partners	
Figure 4-2	
Fish Average Concentrations and 95% Confidence Intervals	
SCALE: NTS	PROJECT ID: 10g007
Date: 04-18-11	PREPARED BY: SGL
checked by: JBM	Foth Infrastructure & Environment, LLC
	FIG 4-2

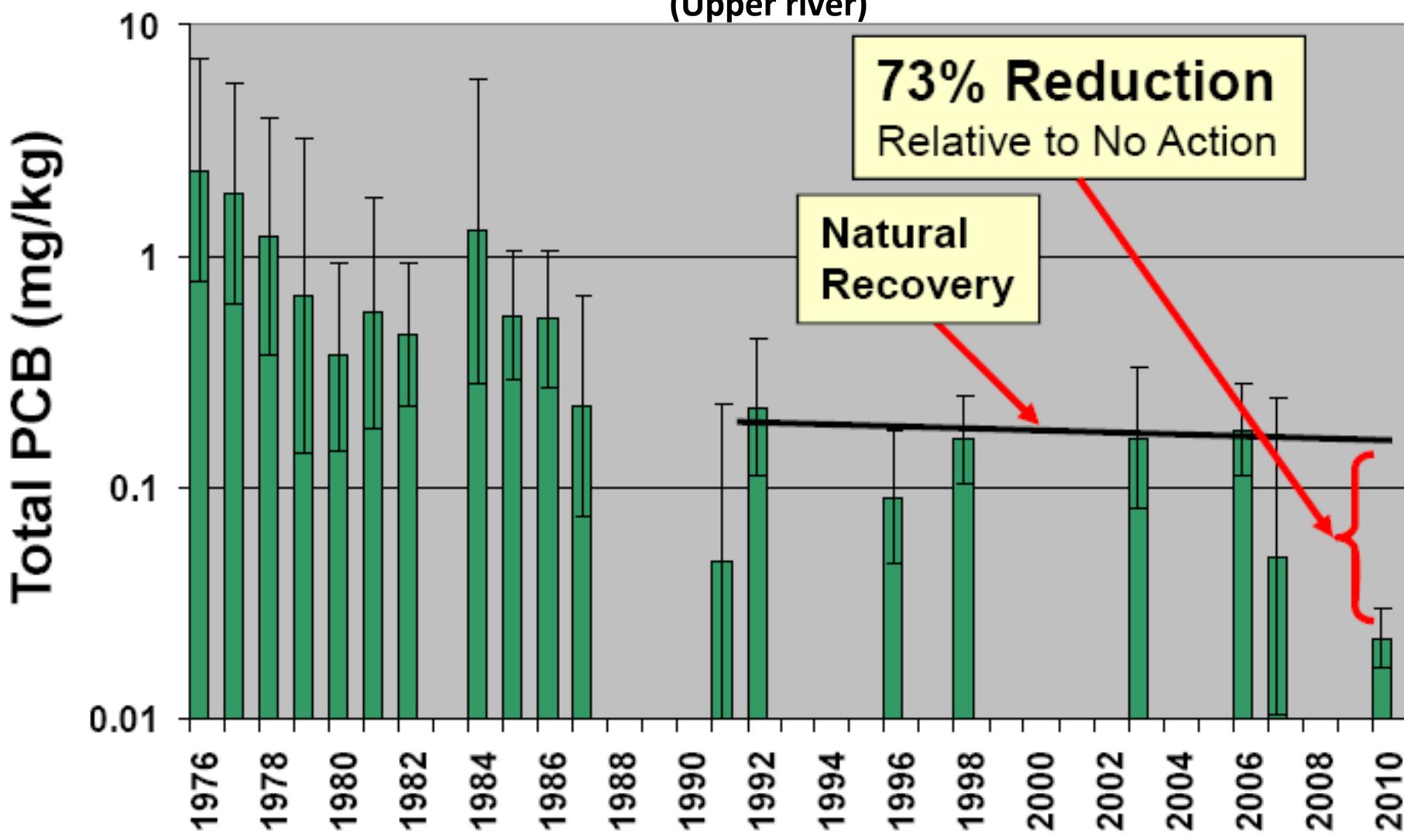
## Walleye PCB concentrations Upper river



From: GW Partners and LLC, Preliminary draft, Year Zero  
Summary Report, Lower Fox River OU1, May 2011.

# Total PCB Concentration in Walleye Fillets Little Lake Buttes Des Morts, WI\*

(Upper river)



From: Boldt oversight team

# Economics

## PCB removal dredges up work for local companies

River project has generated state, regional revenue

BY TONY WALTER

twalter@greenbaypressgazette.com

The negative environmental impact of PCBs in the Fox River is providing a positive economic result for many local companies.

The 10-year project that includes removing polychlorinated biphenyl sediment from the Lower Fox, treating it in a process plant under construction, and hauling it to a Calumet County landfill has resulted in \$200 million in contracts to local, regional



Fox River PCB cleanup site workers float on a dredging barge offshore from Fort Howard Avenue in De Pere. **File/Press-Gazette**

and state companies, project officials say.

"We definitely wanted to hire local companies," said Ray Mangrum, project manager for Tetra Tech, the company in charge of the river cleanup project.

"We just bid it out to locals."

Tetra Tech is supervising construction of a 247,800-square-foot pro-

### More online

For archived coverage, go to [www.greenbaypressgazette.com/foxrivercleanup](http://www.greenbaypressgazette.com/foxrivercleanup).

cific Corp.'s Broadway plant. Dredging of almost 4 million cubic yards of PCB-contaminated sediment is scheduled to begin in May south of the De Pere dam and eventually cover the river portions north of the dam to the bay.

It will be the largest PCB river remediation project in the world and is estimated to cost about \$600 million, although the paper mills responsible for dumping the PCBs — a waste material from the

countability.

The processing center is the first of its kind, something Mangrum said he designed on a napkin.

"Everybody in the world with a major sediment project will come here to see what's going on," said Stephen McGee, project coordinator for Tetra Tech.

They will see that the majority of the work is being provided by local companies and laborers. Mangrum said there will be about 140 workers on site through the winter and 85 to 100 working at the center when it becomes operational.

"I've worked all over the U.S. and these are the best

► See PCB, A-2

Feb. 2008 Green Bay Press Gazette

- \$300 million+ for cleanup work contracts
- 35 - 140 jobs/year since 2004

(mostly April to November)

# Environmental careers

- Masters degree usually needed (don't doubt yourself)
- Hiring windows (“Timing is everything”\*)
- “Foot in door” (e.g., internships, state, local jobs, etc.)
- **Contacts!**

\* Hesiod, Greek didactic poet (~800 BC):  
“Observe due measure, for right timing is in all things the most important factor.”

# Questions/Discussion

Photo courtesy of Boldt oversight team



## ***The Great Lakes Song***

**The Earth Tones' 15th Anniversary Concert**

**Bill Tong, Karen Reshkin, Mary Ann Suero**

**U.S. EPA - Region 5**

**Chicago, IL - April 20, 2011**

**Video by Bill Tong**