

# **Fox River PCB cleanup Oshkosh Bird Club**

**Jim Hahnenberg  
U.S. EPA  
May 4, 2010**



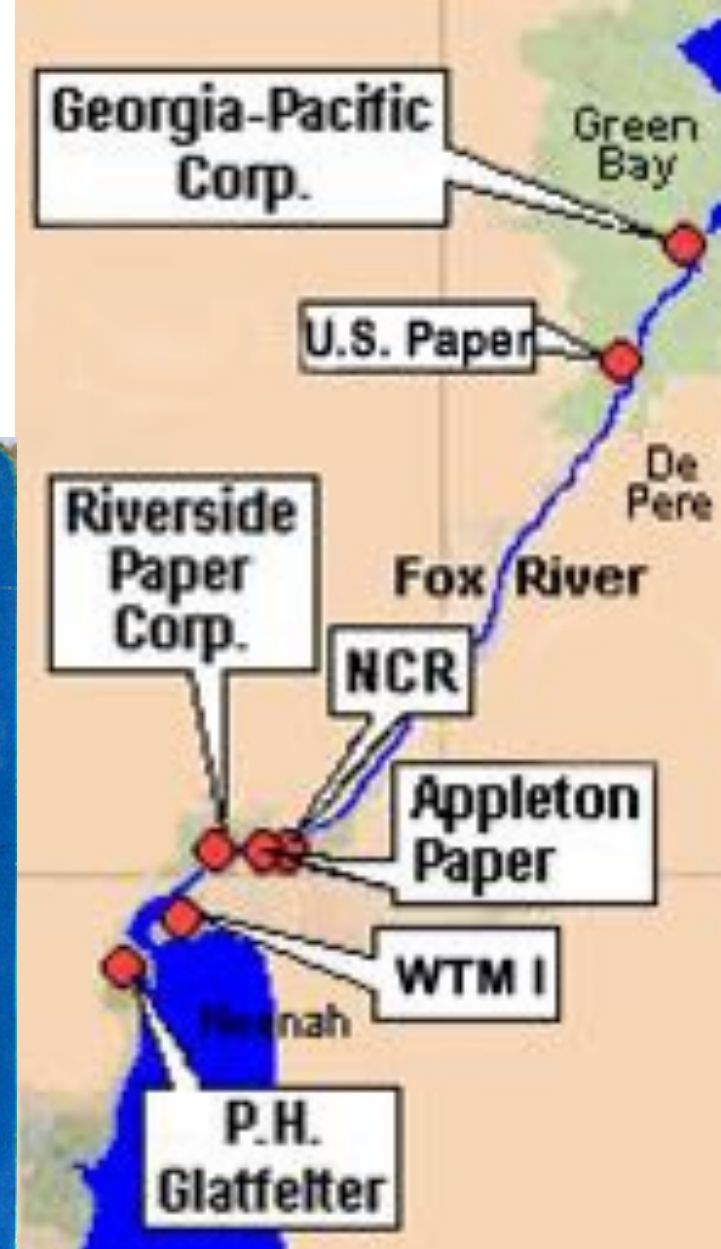
# **The Fox River...**

**1. A billion dollar problem**

**2. Fixing the Fox**



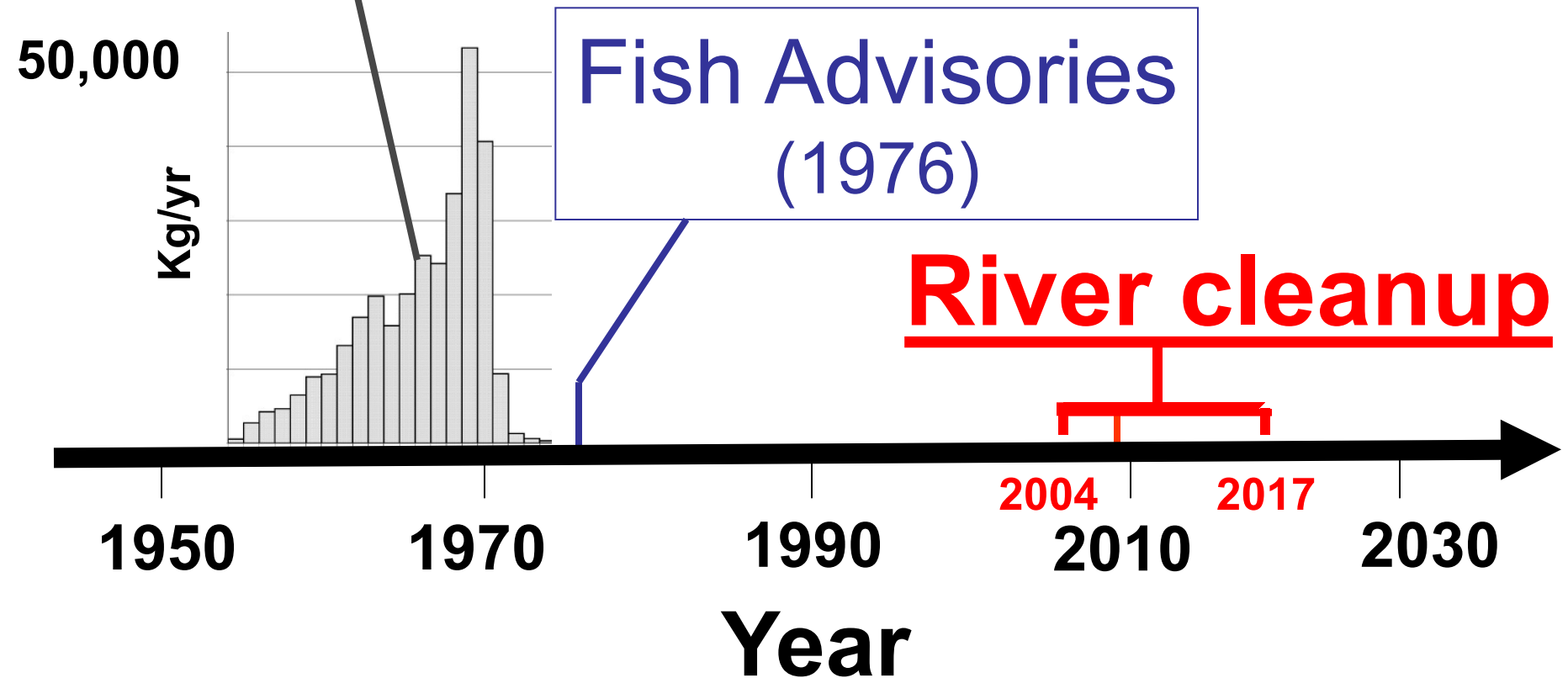
# PCB sources (1954 – 1971)



Modified from Green  
Bay Press Gazette

# Timeline

PCB discharges\*



\* From: WDNR, 1999, Technical Memorandum 2d (Figure 9)



# PCB costs

- **Clean up: nearly a billion dollars**
- **Affects:**
  1. **Fishing**
  2. **Tourism**
  3. **Shipping**
  4. **Human health**
  5. **Ecosystem**
  6. **Lake Michigan**



# **PCB dollar cost**

**1) Cleanup costs: ~\$800 million**

**2) Resources “lost use”\***

- Past: \$65 million**

- Future: \$100 to \$270 million**

**\* Estimates by U.S. Fish and Wildlife Service.**

# PCBs in foodchain



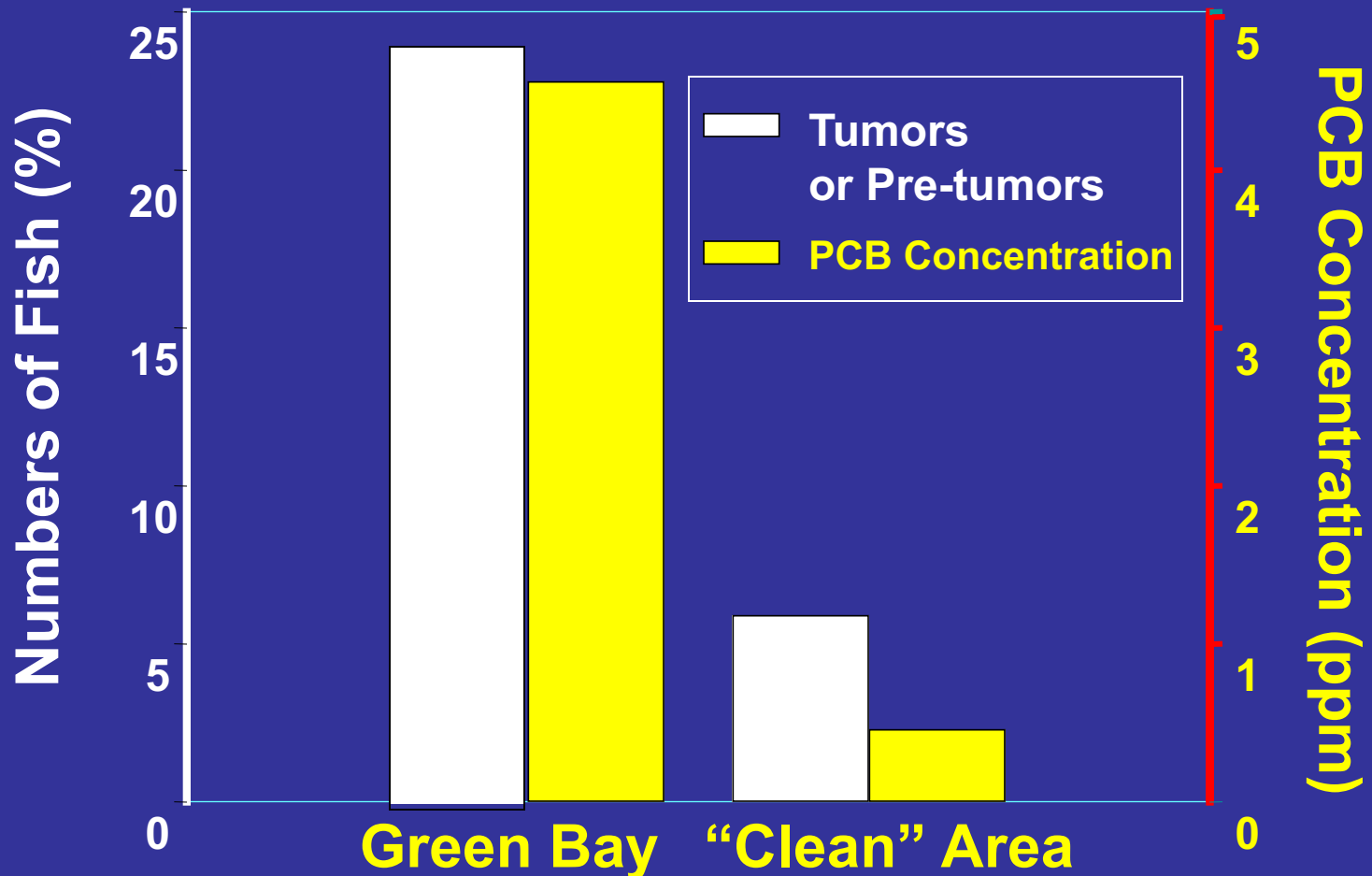


# **PCB effects: migratory birds**

- **Possible behavioral (considered in risk assessment) and immunological effects**
- **Studies indicate bird return rates may be less due to PCB effects**
- **Deformities**

# Walleye tumors

## Green Bay



# Fish advisories



Black Crappie



Bluegill



Brown Trout



Carp



Channel Catfish



Chinook Salmon



Northern Pike



Rock Bass



Rainbow Trout



Smallmouth Bass



Splake



Sturgeon



Walleye



White Bass



White Fish



White Sucker



White Perch



Yellow Perch

## PCB HEALTH ADVISORY

for Fox River-downstream from DePeri Dam

\*Minimum size for Smallmouth Bass = 14 inches

Enjoy your day of fishing and have a tasty, healthy meal of fresh-water fish. For the health of your kids, please follow this health advice. Eat the following fish with caution from this water. These fish contain PCBs.

1) Eat no more than 1 meal per week (52 meals per year) of...

_____	_____	_____
_____	_____	_____
_____	_____	_____

2) Eat no more than one meal per month (12 meals per year) of...

<u>Walleye under 14 inches</u>	<u>Bluegill</u>
<u>Northern Pike under 25 inches</u>	<u>Rock Bass</u>
<u>Black Crappie under 9 inches</u>	<u>Yellow Perch</u>
<u>Sheepshead under 10 inches</u>	

3) Eat no more than one meal every two months (6 meals per year) of...

<u>Walleye 14-22 inches</u>	* <u>Smallmouth Bass</u>
<u>Northern Pike above 25 inches</u>	<u>White Perch</u>
<u>Black Crappie above 9 inches</u>	
<u>Sheepshead 10-13 inches</u>	

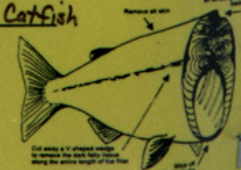
4) DO NOT EAT...

<u>Walleye above 22 inches</u>	<u>White Bass</u>
<u>Sheepshead above 13 inches</u>	
<u>Carp</u>	<u>Channel Catfish</u>

When preparing fish from these waters, remove the skin and all fat before cooking. Do not use juices from the cooked meat.

See your fishing regulations book for legal size limits.

Recommended by the Wisconsin Department of Natural Resources and the Division of Public Health. Call the local DNR office 920-492-5500 for a copy of the state-wide advisory.





# **Fox River Green Bay fishers**

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

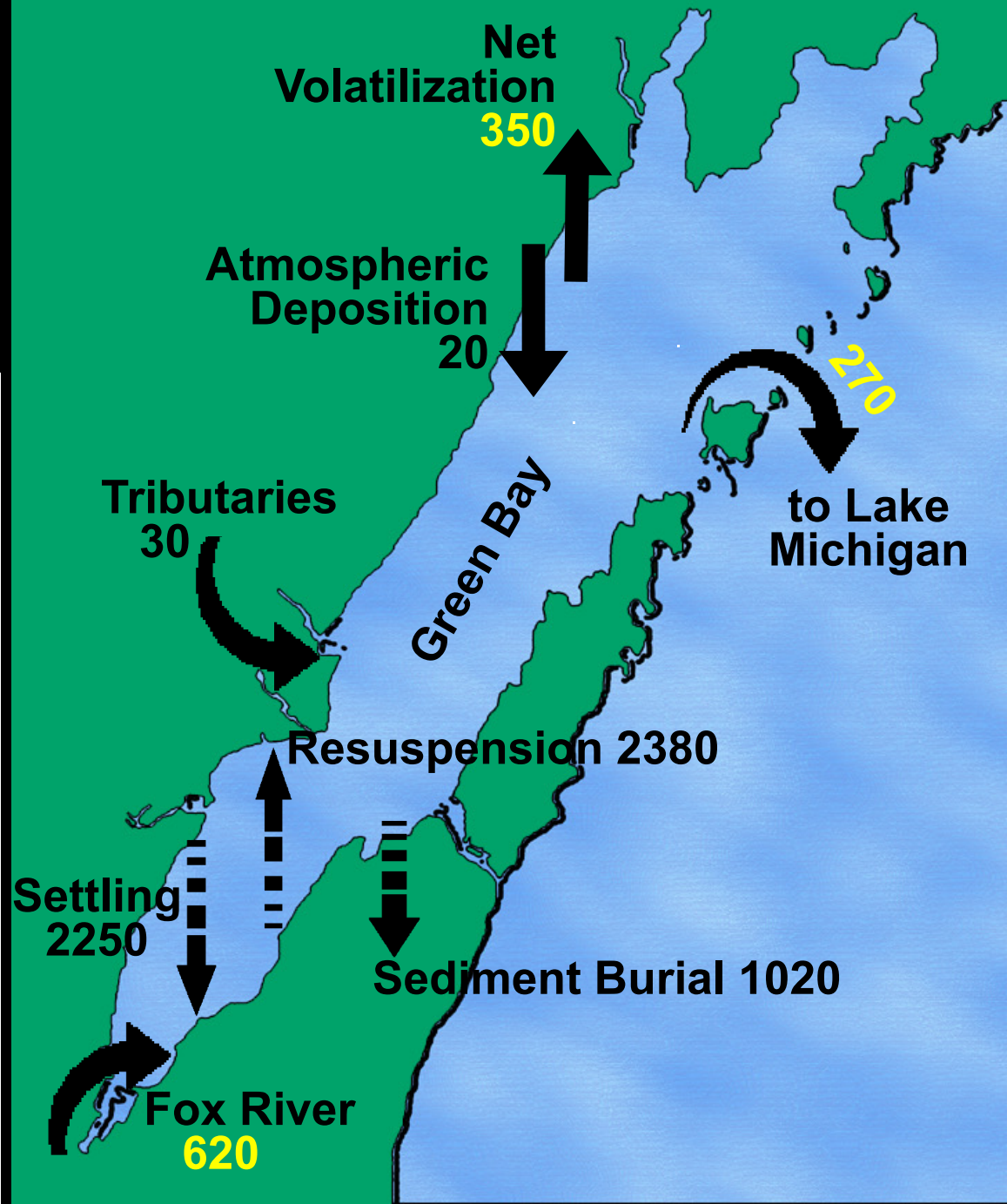


# PCB movement (pounds)

**Fox River:**

**71% of tributary  
loadings to Lake  
Michigan**

After Raghunathan,  
DePinto et al.; 1994





# Fixing the problem...

## 1) Dredging & disposal



## 2) Capping & Covering





**2004 – 2009**  
**790,000 cy**  
**\$100 million**

**2007– 2017**  
**7.2 million cy**  
**\$700 million**



Data use subject to license.  
© 2004 DeLorme. Topo USA® 5.0.  
[www.delorme.com](http://www.delorme.com)

★  
MN (3.2° W)

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

# Little Lake Butte des Morts



Photo from Ann Schell

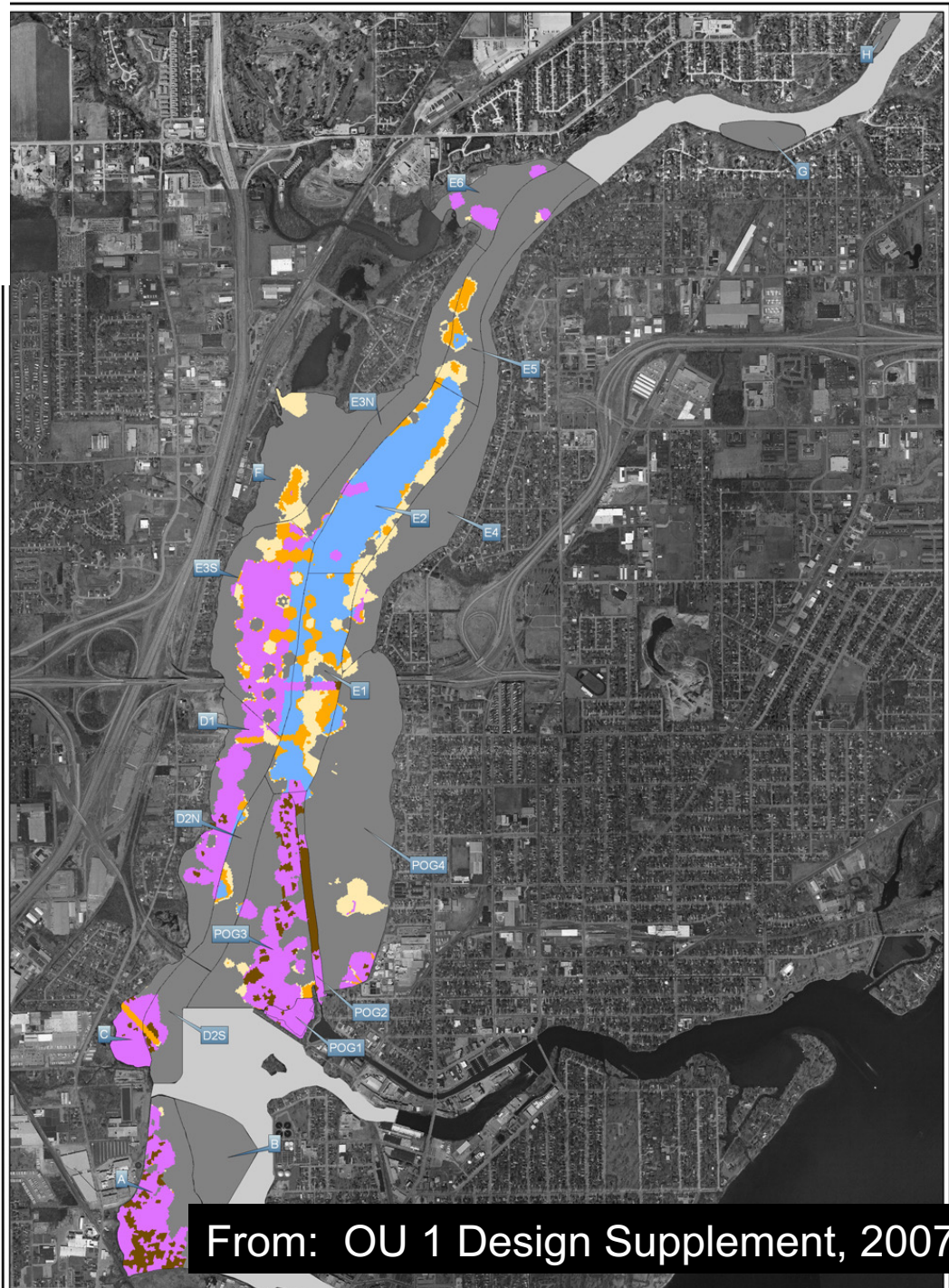


# Little Lake Butte des Morts cleanup actions

 Dredging

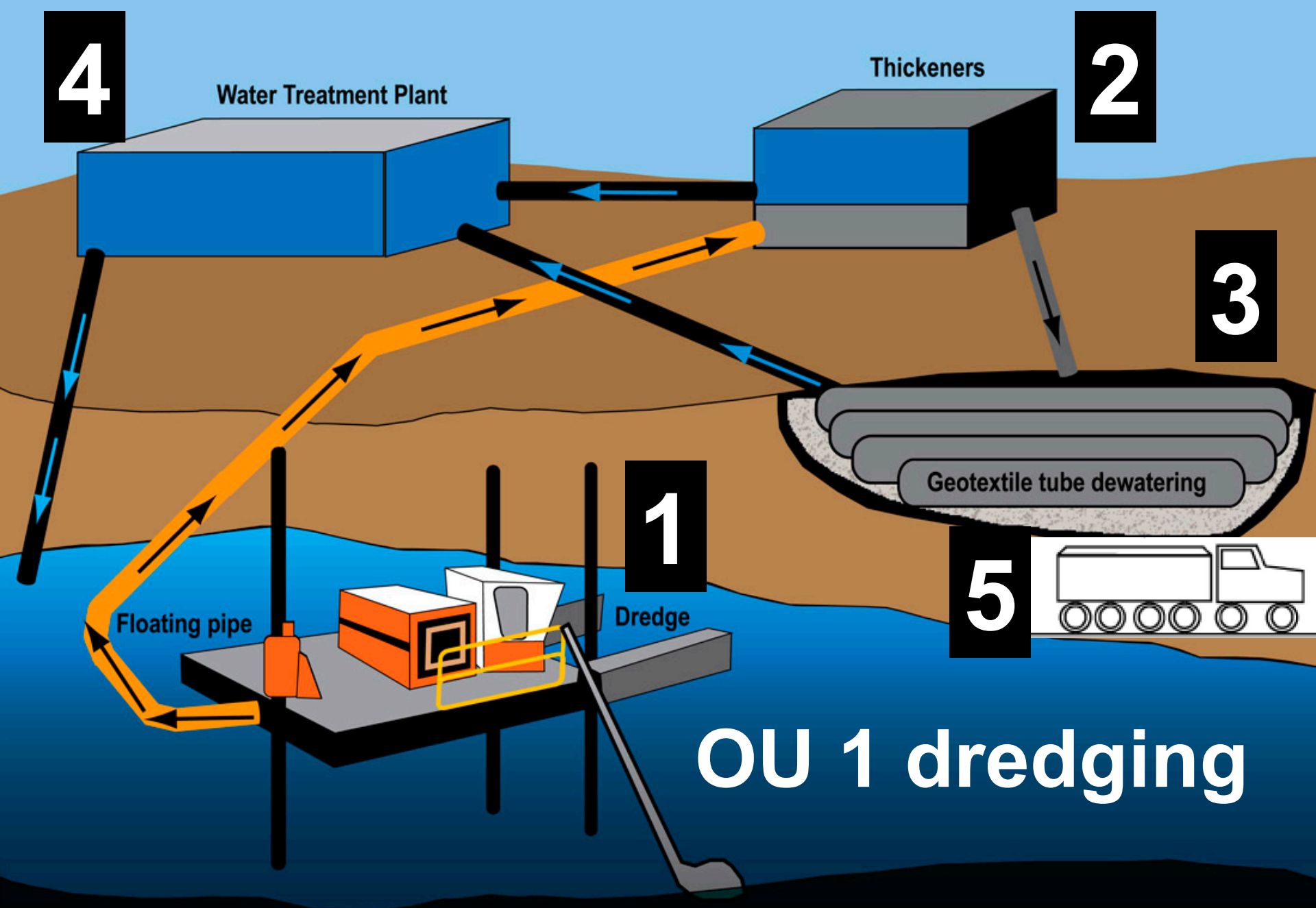
 Capping

 Covering



From: OU 1 Design Supplement, 2007





OU 1 dredging



# Hydraulic dredge



Photo courtesy of Boldt



# In-water pipeline



from dredge

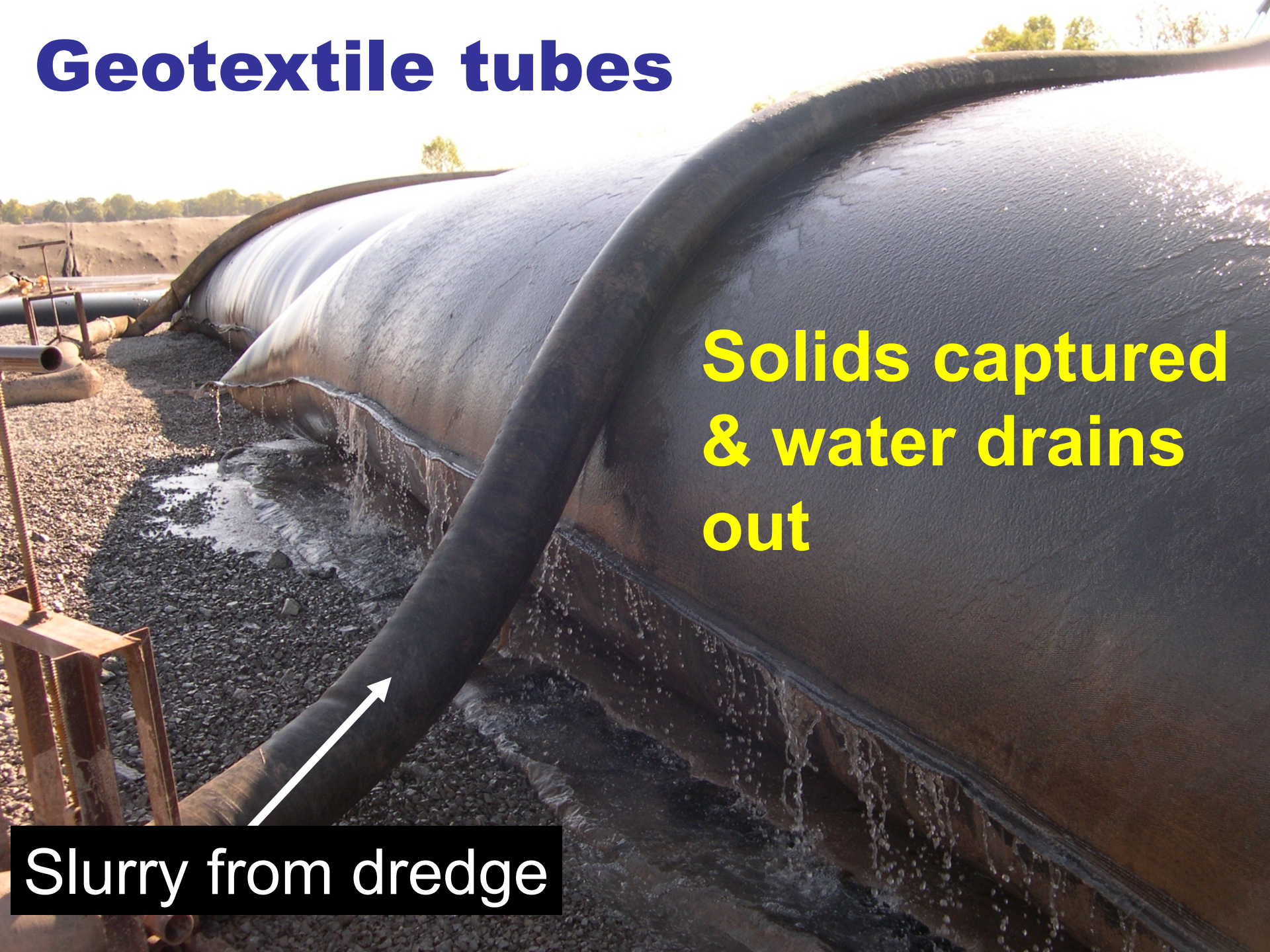
to dewatering &  
water treatment



# Geotextile tubes

**Solids captured  
& water drains  
out**

**Slurry from dredge**





# Geotextile tubes



- 200 feet long
- 60 foot circumference
- Contains ~1600 cubic yards

# Stacked tubes



11 12:37PM

From: Little Lake Cleanup Team



# The field of tubes





# Loading sediment for disposal





# Sediment disposal



**Photo courtesy of Boldt**

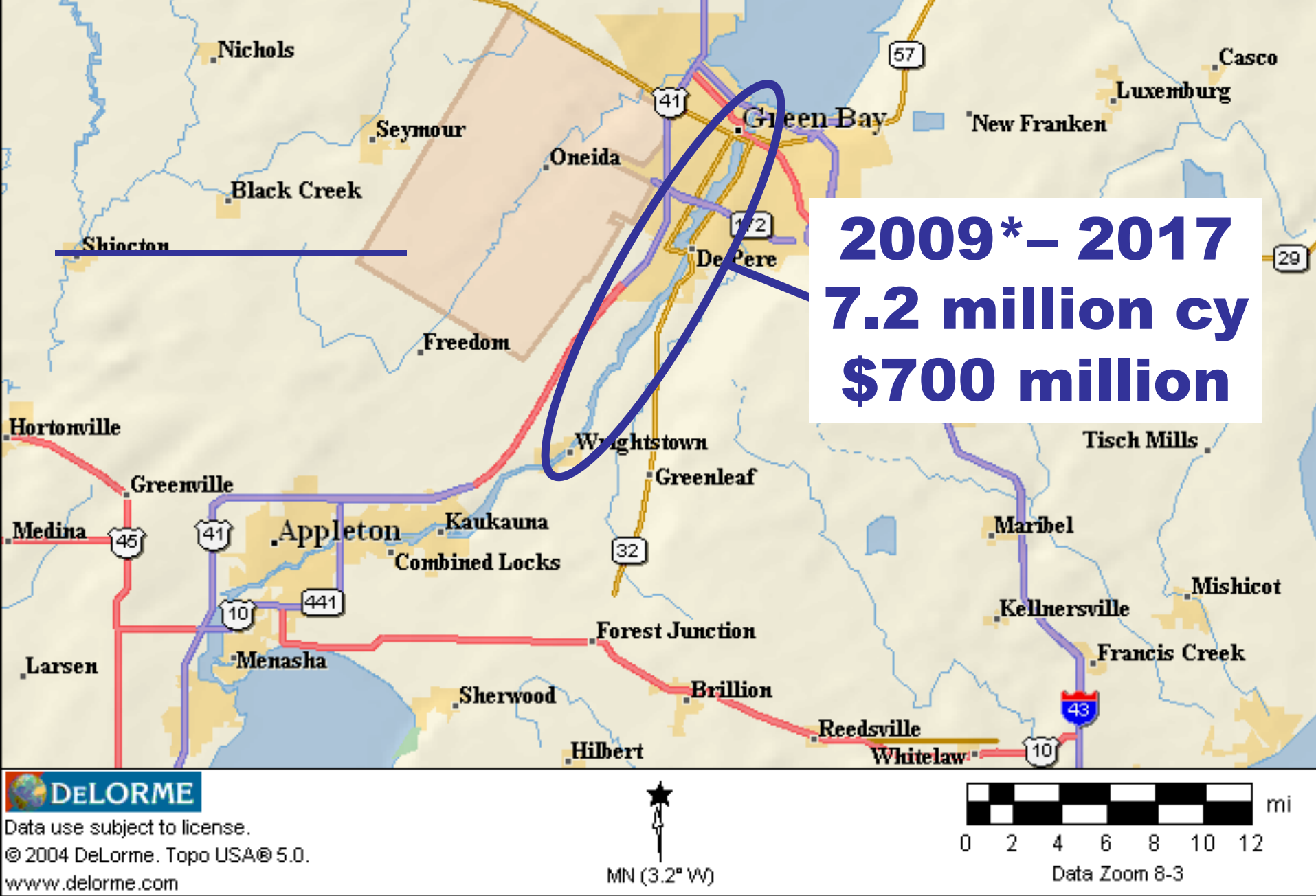


# Capping: “throwing stone”



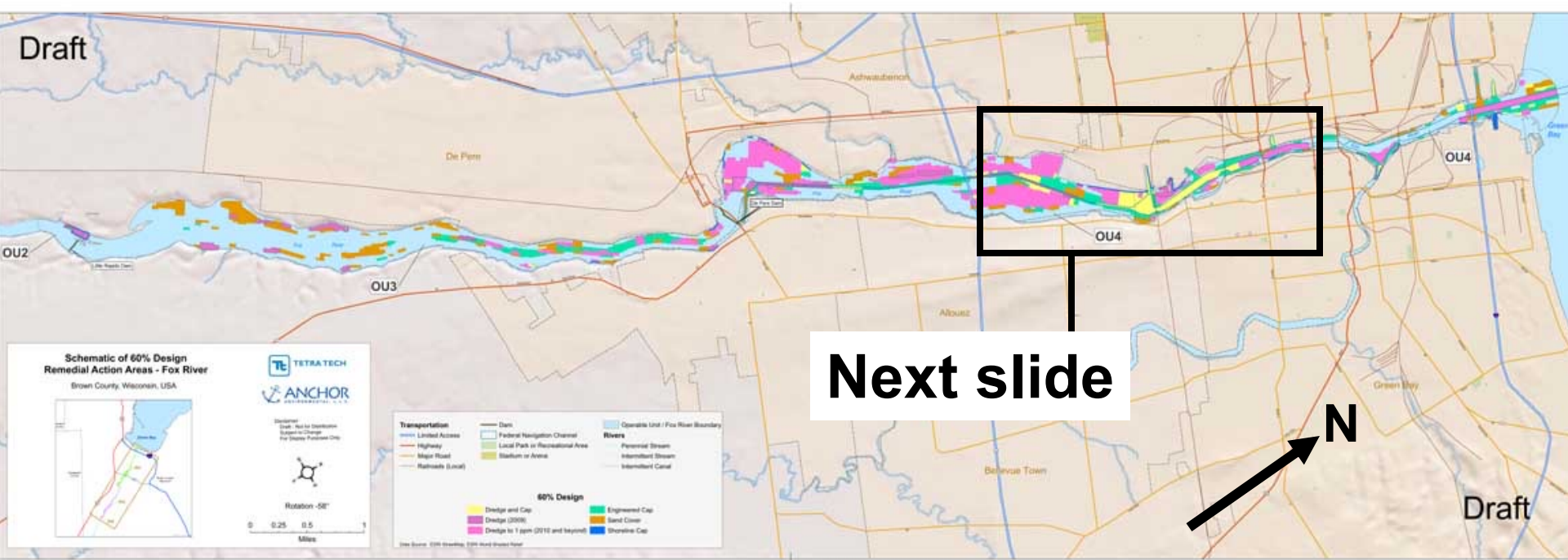
**Photo courtesy of Boldt**





**\* Phase 1 in 2007**

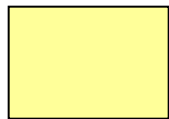
# Downstream cleanup



**Dredging**



**Cap (sand and gravel)**



**Dredge  
and Cap**

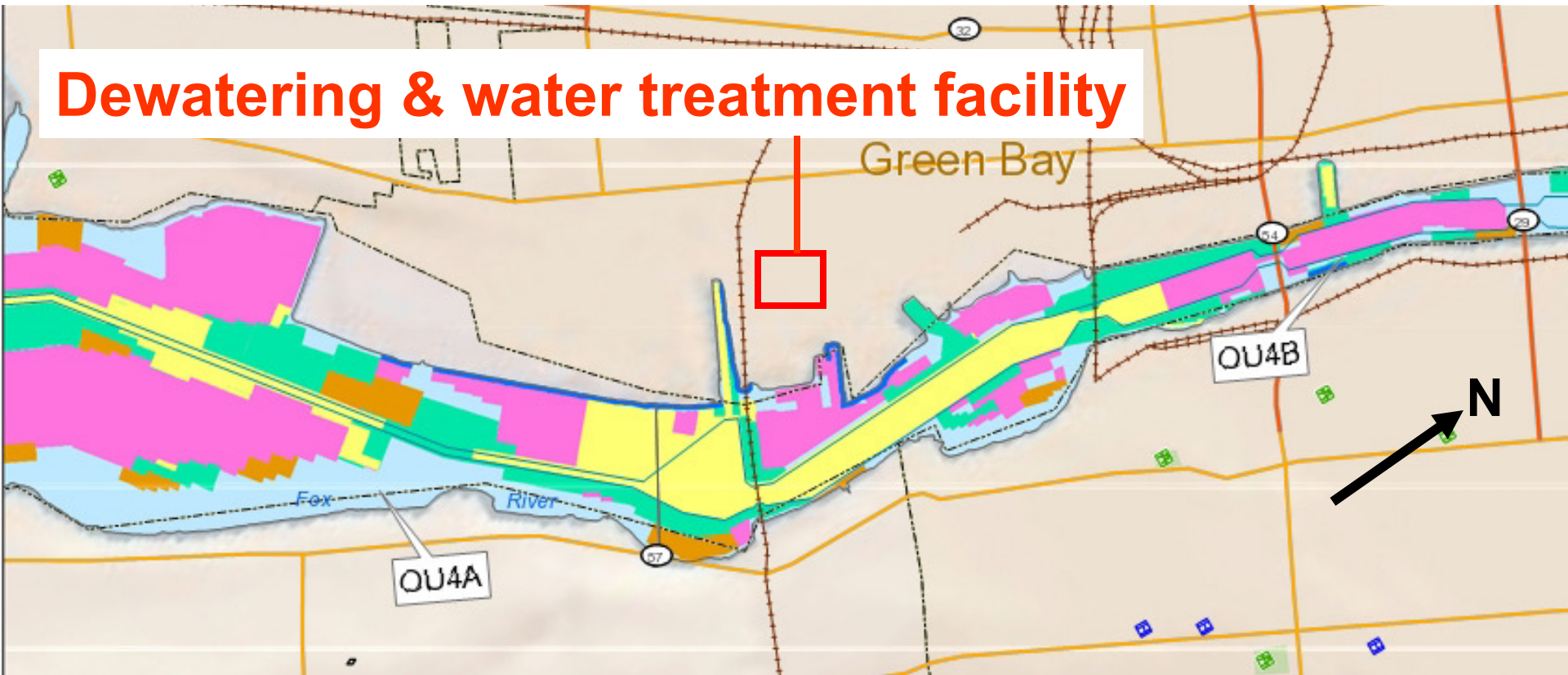


**Cover (sand only)**

Courtesy of Tetra Tech

# Downstream cleanup

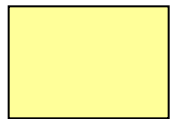
**Dewatering & water treatment facility**



**Dredging**



**Cap (sand and gravel)**



**Dredge  
and cap**



**Cover (sand only)**

Courtesy of Tetra Tech



# Dewatering facility construction



From: TetraTech weekly QC report

# **Dewatering and water treatment facility**



**Photo courtesy of TetraTech**



# Dredge cutterhead



Photo courtesy of Boldt



# Pre-thickener



Photos courtesy of TetraTech



# Plate and frame presses to dewater dredge slurry



Photo courtesy of Boldt



# Sediment storage



Photo courtesy of Boldt



# Loading sediment



Disposal

Photo courtesy of Boldt




# Army Corps of Engineers navigation dredging





# Interagency Agreement Between EPA and the USACE

	<p>United States Environmental Protection Agency Washington, DC 20460</p> <p><b>Interagency Agreement/ Amendment</b></p> <p><b>Part 1 - General Information</b></p>	<p>1. EPA IA Identification Number DW-96-95777901 - 0</p>	<p>2. Funding Location by Region EPA R5</p>
		<p>3. Other Agency IA ID Number (if known)</p>	<p>4. Awarding Office ASSC West</p>
		<p>5. Type of Action New</p>	
<p>6. Name and Address of EPA Organization US Environmental Protection Agency IASSC WEST 1200 6th Ave., Suite 900, OMP-145 Seattle, WA 98101</p>		<p>7. Name and Address of Other Agency U.S. Army Corps of Engineers EM CX 1616 Capitol Ave., Suite 9200 (CEHNC-CX-ES) Omaha, NE 68102-9200</p>	
<p>8. DUNS: 029128894</p>	<p>9. BETC: DISB</p>	<p>10. DUNS: DOD964126</p>	<p>11. BETC: COLL</p>
<p>12. Project Title and Description</p> <p>Remedial action support for Units 4 and 5 at the Lower Fox River and Green Bay Superfund Site, WI</p> <p>The objective of this agreement is to provide funding for certain response action work which will be performed in conjunction with the U.S. Army Corps of Engineers navigational dredging at the site.</p>			
<p>13. EPA Project Officer (Name, Address, Telephone Number) JAMES HAHNENBERG 77 West Jackson Blvd. Chicago, IL 60604-3507 312-353-4213 E-Mail: hahnenberg.james@epa.gov FAX: 312-888-6069</p>		<p>14. Other Agency Project Officer (Name, Address, Telephone Number) Marvene Seaman 1616 Capitol Ave., Suite 9200 (CEHNC-CX-ES) Omaha, NE 68102-9200 402-697-2425 E-Mail: Marvene.L.Seaman@usace.army.mil FAX: 402-697-2613</p>	
<p>15. Project Period: 05/01/2010 to 01/31/2011</p>		<p>IA Specialist: Joanne Brendle 206-553-6385</p>	
<p>16. Scope of Work (See Attachment) See attached Scope of Work.</p>			
<p>17. Employee/Tax ID No. 520852695</p>		<p>18. CAGE No: 347A4</p>	

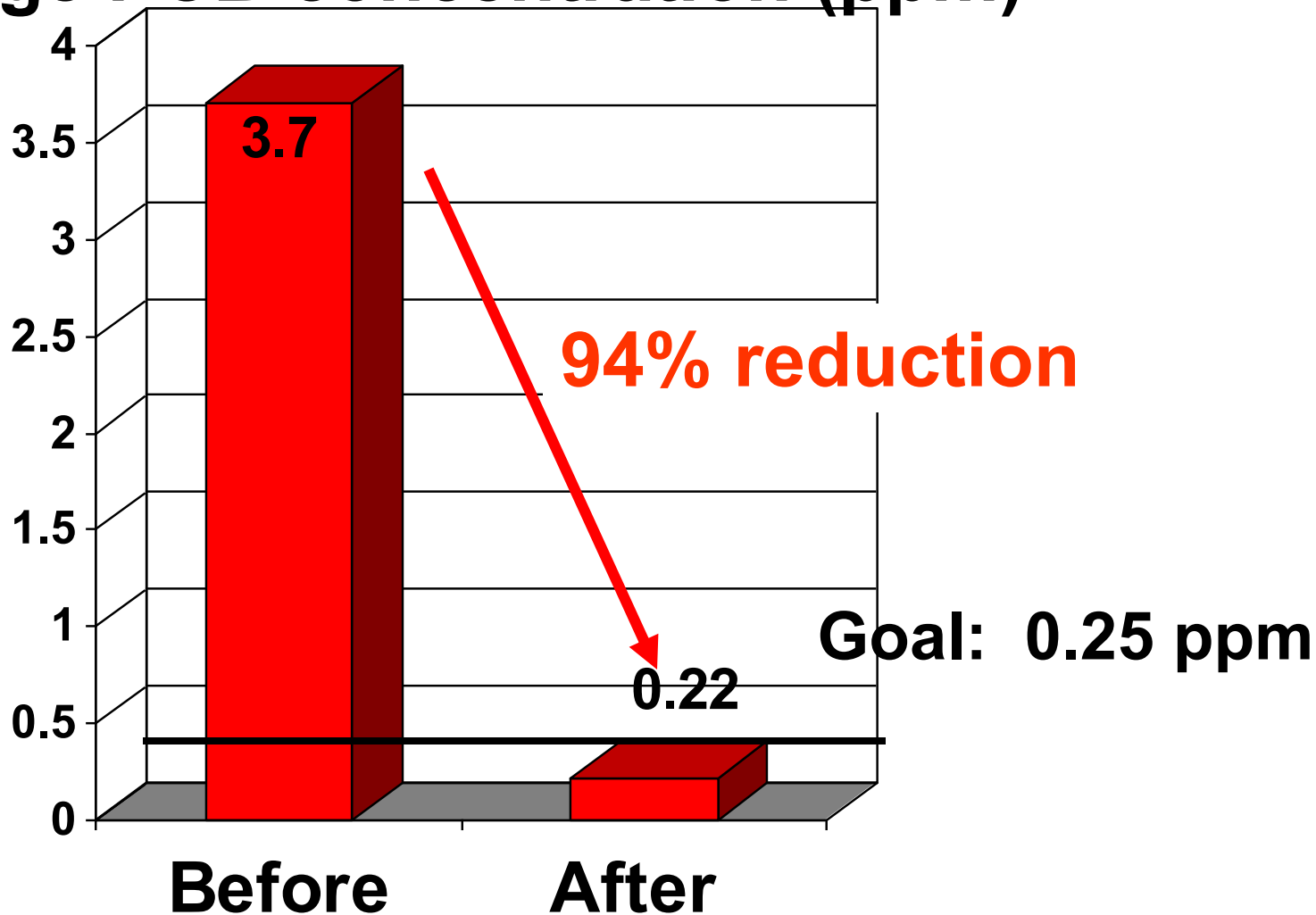
# Cleanup progress

- **Little Lake Butte des Morts completed 2009**
- **Downstream (Little Rapids to Green Bay)**
  - 2009: dredged 541,000 cubic yards of sediment (~7 Walmarts)
  - 2010: dredging 550,000 cubic yards, capping 50 acres, & covering 82 acres
- **2017: 8 million cubic yards/1600 acres dredged, capped or covered**

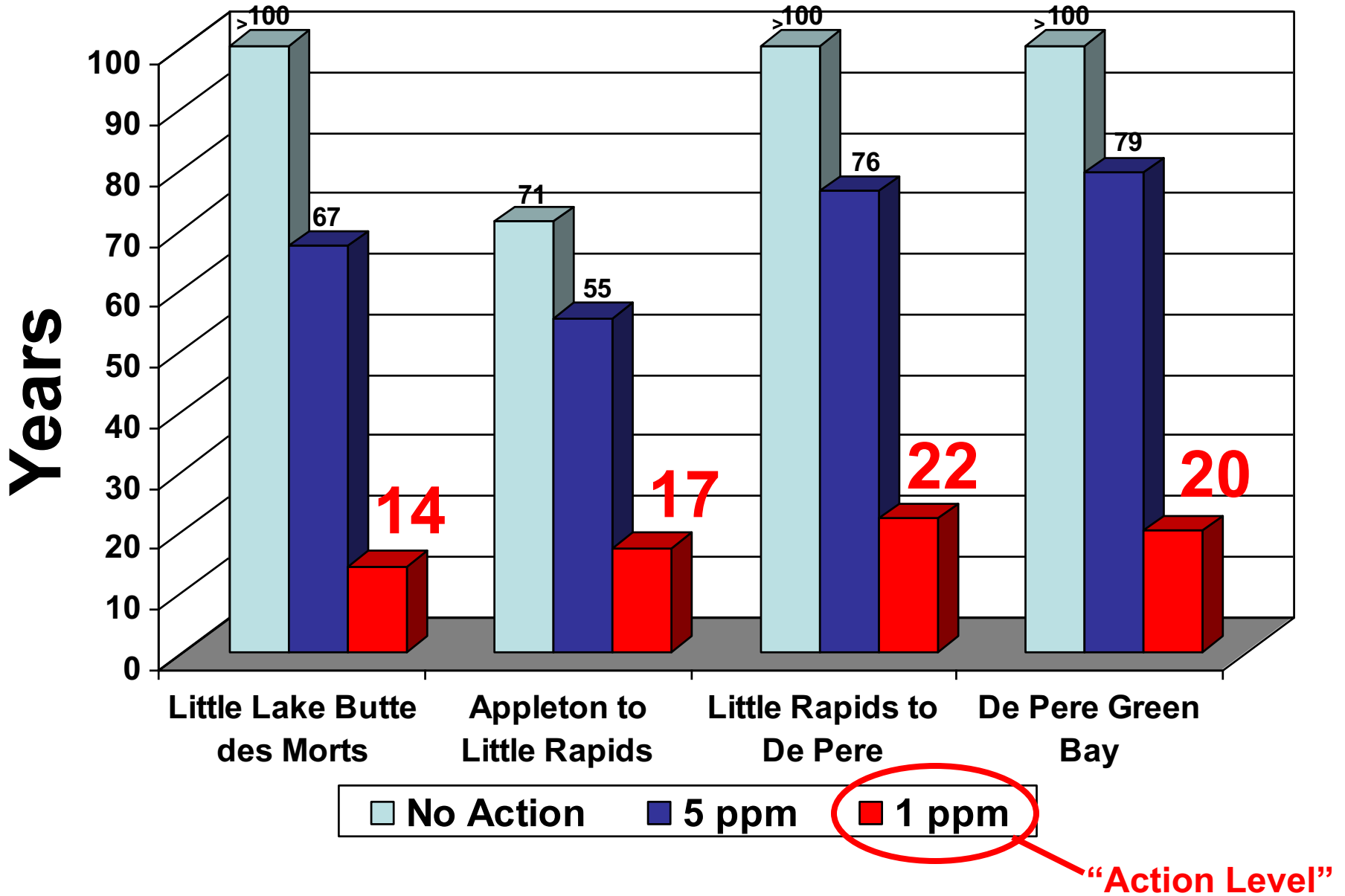


# Little Lake Butte des Morts

Average PCB concentration (ppm)



# Time after cleanup to safe levels for birds





# Prognosis appears good for Fox River



**From: Milwaukee Journal**

Bergquist



# Questions/discussion

