

DOH PCBs Baseline Public Water Supply Monitoring

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DOH PCBs Baseline Public Water Supply Monitoring

- Background on Monitoring Plan
 - Why Monitor
 - What was done
 - Supplies Tested
 - Aroclor and Congener
 - Historical Data
- Results
- Conclusions

DOH PCBs Baseline Public Water Supply Monitoring Data Use

- Funded by EPA, DOH Role is both Superfund and PWS Regulatory
- Understand what effects the dredging may have on PCB levels at intakes of supplies
- Monitor compliance with MCLs
- Provide data that is directly comparable to the in-river monitoring data

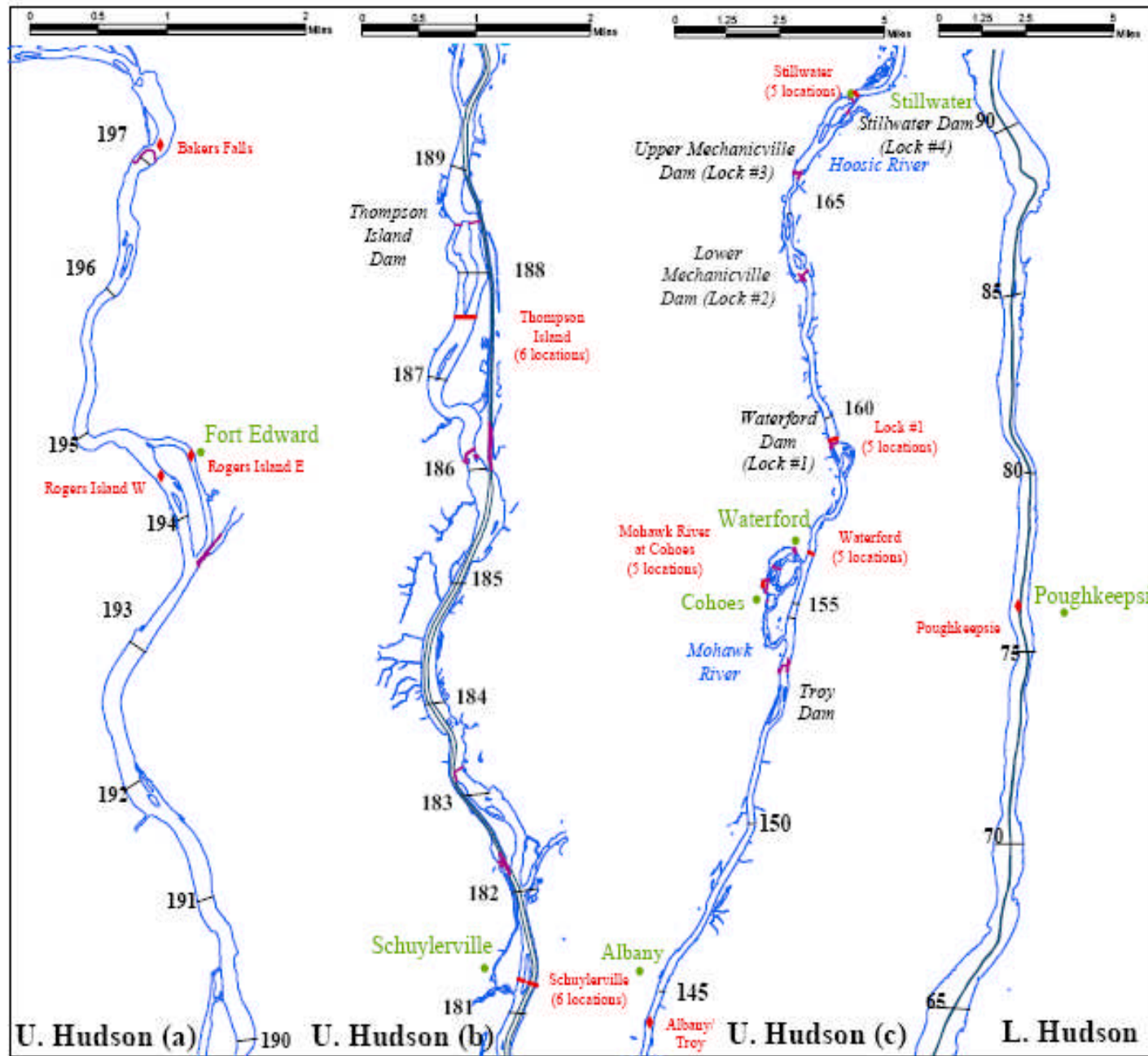
Hudson River Water Supplies Sampled and How Far Downstream of Fort Edward

- **Upper River Supplies**

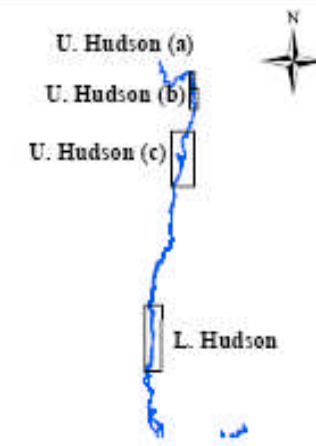
- Stillwater (V) Approx 26 miles
- Halfmoon (T) Approx 36 miles
- Schuylerville/Victory(V/V) Approx 14 miles
- Waterford (V/T) Approx 38 miles

- **Lower River Supplies**

- Green Island (V) Approx 43 miles
- Rhinebeck (V) Approx 101 miles
- Port Ewen (V) Approx 103 miles
- Lloyd (T) – Approx 118 miles
- Poughkeepsie (C/T) Approx 118 miles



LOCATOR MAP OF THE HUDSON RIVER



LEGEND

- ◆ Monitoring Stations
- Monitoring Transects
- Navigational Channel
- Dams and Locks
- River Miles

General Electric Company
Hudson River Project

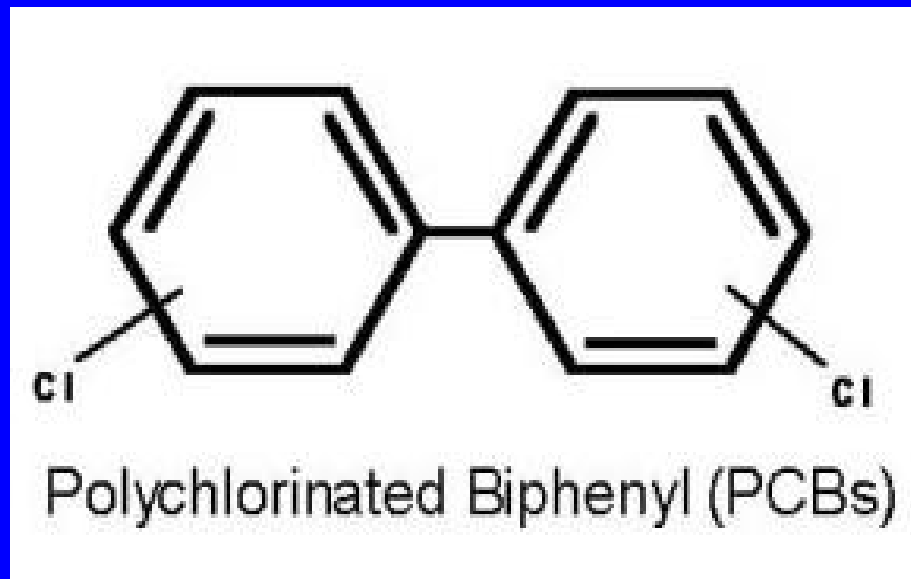
Figure A-2. Water Monitoring Stations and Transects.

Note: River miles measured from the Battery (0.0).

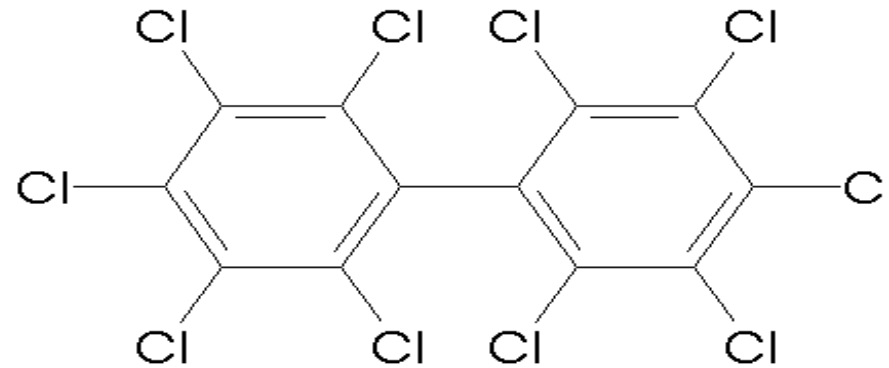
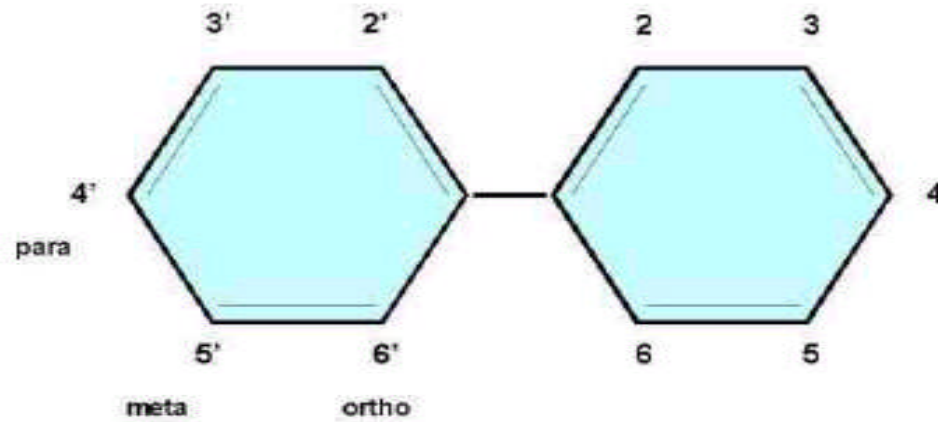


PCBs, (a quick review to help understand the measurement techniques)

- Polychlorinated biphenyls (PCBs) are a group of 209 synthetic chlorinated organic compounds having the following generic structure:



PCB Structure and a PCB Congener



PCBS were sold in mixtures

- The common mixtures sold in the US and used by GE were known as Aroclors.
- Different mixtures were commonly sold known as Aroclor 1016, 1221, 1242, 1248, 1254, 1260. In general, the last two numbers reflect the percentage of chlorine in the mixture.

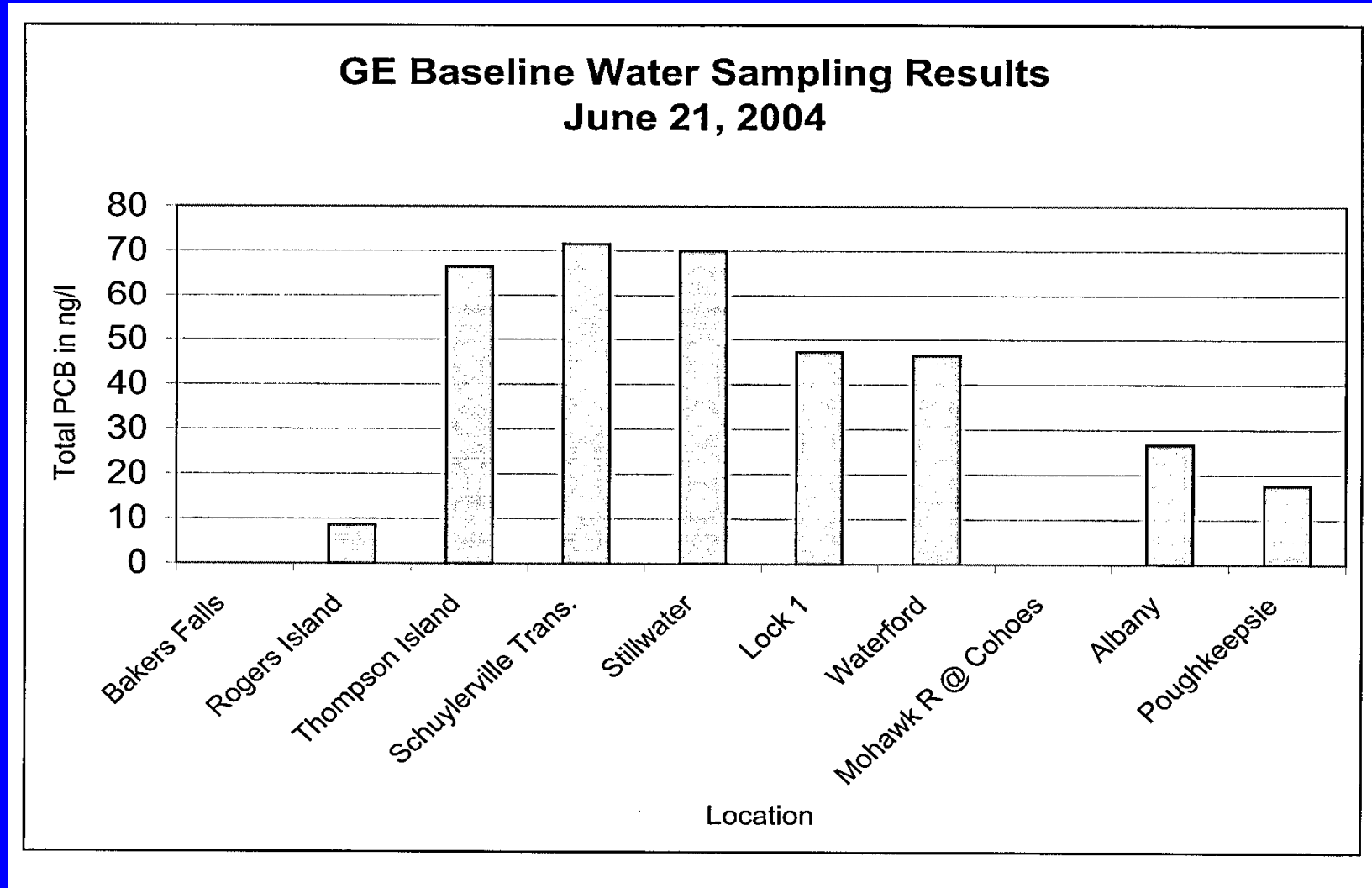
DOH PCBs Water Supply Monitoring Program Methodology

- **Two methods of measurement used**
 - **Method 508---**Used in regulatory monitoring, identity is based on congener/Aroclor pattern, specific congeners used to quantify whole mixture. However, in this program we required the laboratory to have a **Detection Limit** lower than typically used.
 - **Modified Green Bay Method ----**Measures specific congeners, congener specific, each congener detected is added to the total.

In-River PCBs Conditions (generalized)

- **River at Waterford has around 30 to 50 ppt of PCB in spring and summer months**
 - **Higher levels may be found during high flow and are associated with high turbidity (as high as 120 at Waterford)**
 - **Higher levels may be found in summer (July and August) and associated with bioturbidity and greater dissolved phase fraction**
 - **Lower levels may be found in the winter when low temperatures and low turbidity exist**

In-River Results



Water Supply Data

- Both Waterford and Halfmoon have a recent history of non-detects using Method 508 run at commercial labs with detection limits typically between 100 ppt and 250 ppt
- Raw water and finished water sample 2/4/03--
 - Aroclor method non-detect
 - also analyzed congener method--non-detect

Summary of July 21, 2008 Press Release

- Press release reported on seven Systems tested -two rounds (note—we tested two more systems subsequent to press release)
- Sampling started in May 2008 (went through November to mirror dredging period)
- Quick description of two methods used, Aroclor and congener, both with low ppt detection limits
- All results were below drinking water standard

July 21, 2008 Press Release

Public Water Supply Name	Date	Sample Type	Method Green Bay ^A	Method 508 ^B
			Concentration (ppt) ^C	Concentration (ppt)
Stillwater	5/30/08	source	81.9	
	5/30/08	treated	89.0	119.1
	6/26/08	source	99.5	79.8
	6/26/08	well #3	42.3	
	6/26/08	well #4	43.5	
	6/26/08	well #6	109.0	
	6/26/08	well #7	108.0	
	6/26/08	well #8	107.0	
Halfmoon	5/30/08	source	29.0	
Halfmoon	5/30/08	source	29.0	
	5/30/08	treated	12.3	13.9
	6/26/08	source	28.4	6.9
	6/26/08	treated	23.1	41.2
Waterford	5/30/08	source	31.1	23.8
	5/30/08	treated	Less than 9.3 ^D	9.7
	6/26/08	source	32.4	18.1
	6/26/08	treated	Less than 9.3	21.5

July 21, 2008 Press Release

Public Water Supply Name	Date of Sample	Sample Type	Method Green Bay ^A	Method 508 ^B
			Concentration (ppt) ^C	Concentration (ppt)
Green Island	6/5/08	source	Less than 9.3 ^D	
	6/5/08	treated	Less than 9.3	Less than 5.1 ^E
	6/25/08	source	Less than 9.3	
Rhinebeck	6/5/08	source	17.0	
	6/5/08	treated	9.9	159.0
	6/25/08	source	31.0	
	6/25/08	treated	13.4	36.7
Port Ewen	6/5/08	source	40.0	
	6/5/08	treated	Less than 9.3	9.9
Poughkeepsie	6/5/08	source	25.2	
	6/5/08	treated	Less than 9.3	Less than 5.1
	6/25/08	source	19.2	
	6/25/08	treated	Less than 9.3	Less than 5.1

Summary of Results

Location	Finished Drinking Water USEPA Method 508				Finished Drinking Water Green Bay Method				Raw Water Green Bay Method			
	Sample number	Ave ^a	Min	Max	Sample number	Ave	Min	Max	Sample number	Ave	Min	Max
Upper River	1	<5.1 ^b	--	--	1	<9.34 ^c	--	--	4	<9.34	<9.34	<9.3
Schuylerville	12	140.3	97.3	200.9	12	133.2	89	186.6	12	130.3	81.9	164.3
Stillwater	--	--	--	--	--	--	--	--	10	88.8	42.3	140.0
Stillwater wells	12	27.1	8.8	46	12	10.8	<9.34	23.1	12	25.4	12.9	57.1
Halfmoon	11	23.7	9.7	40.5	11	12.8	<9.34	72.2	11	28.2	11.9	51.6
Waterford												
Lower River	Sample number	Ave	Min	Max	Sample number	Ave	Min	Max	Sample number	Ave	Min	Max
Green Island	7	5.8	<5.1	21.2	7	<9.3	<9.34	<9.3	7	<9.3	<9.3	<9.3
Rhinebeck	7	46.5	13.6	159.0	7	13	<9.34	17.5	7	27.3	17	34.4
Port Ewen	7	16.3	9.9	21.7	7	9.4	<9.34	15.2	7	24.1	14.7	40
Poughkeepsie	7	13.2	<5.1	31.1	7	<9.3	<9.34	<9.3	7	45.1	19.2	68.7
Highland	1	11.9	--	--	1	<9.3	--	--	1	10.7	--	--

^aEPA 508 averages are based on the use of 2.5 ng/L for samples where the PCB concentration was below the MDL (five samples at Green Island and two samples at Poughkeepsie).

^b<5.1 indicates the sample (or average of samples) was less than the detection limit of 5.1 ng/L for USEPA Method 508.

^c<9.3 indicates the sample (or average of samples) was less than the detection limit of 9.34 ng/L for GBM.

Summary

- PCBs were detected at most supplies.
- All results were below the Federal and State drinking Water Standard of 500 ppt.
- Stillwater was found to have the highest average concentration and a concentration higher than that found in river water BMP Stillwater samples.
- Final Results consistent with those in July 21, 2008 press release.

Next Steps

- Mail Summary to all Supplies Tested.
- Monitoring plans are in place as previously described at the May 25, 2006 CAG.
- Monitoring plans during Phase 1 dredging will be modified as appropriate to include more or less monitoring.

Questions?