DOH PCBs Baseline Public Water Supply Monitoring

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DOH PCBs Public Water Supply Monitoring

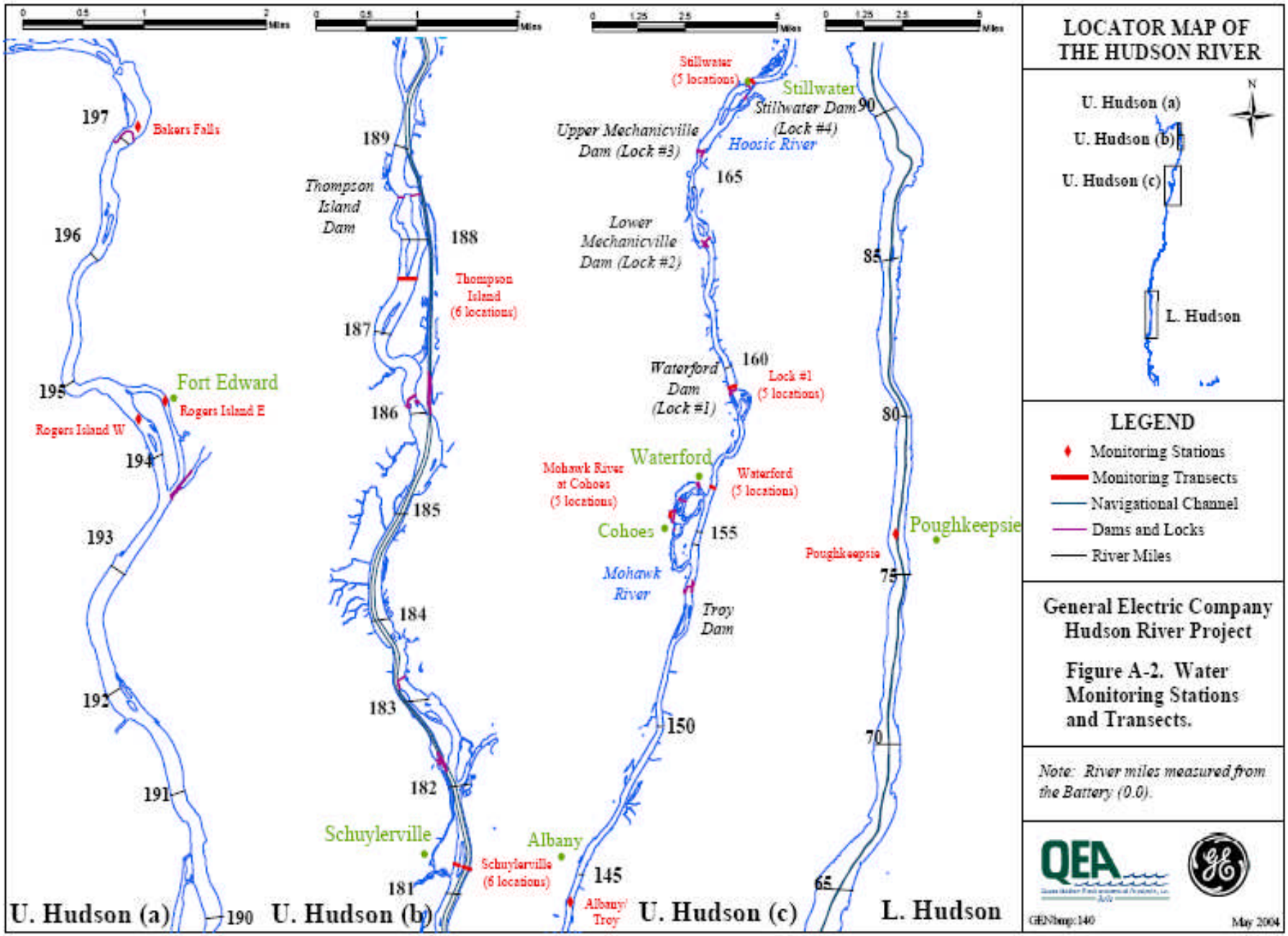
- Background on Monitoring Plan
  - Why Monitor
  - What was done
    - Supplies Tested
    - Aroclor and Congener
  - Historical Data
- Results
  - baseline and during dredging
- Conclusions

DOH PCBs 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
  - Contingency plans

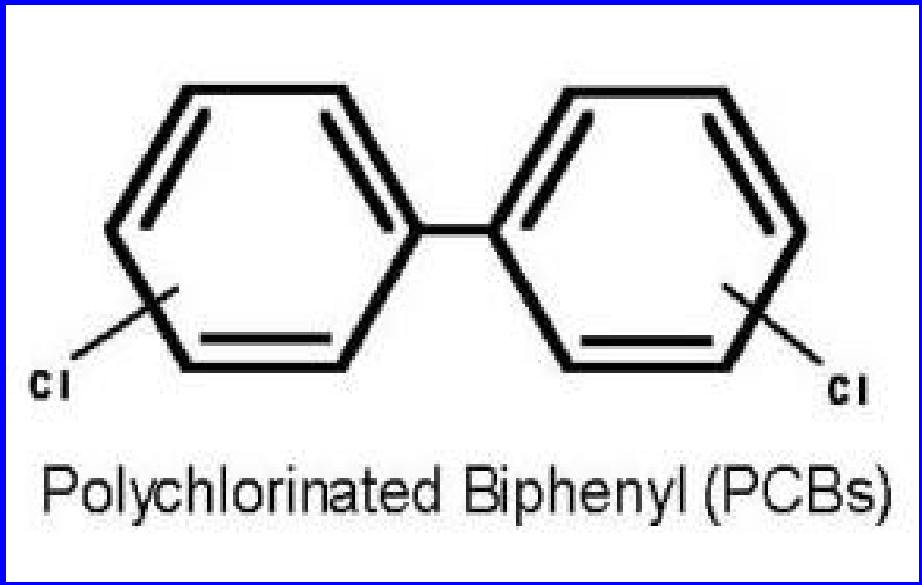
Hudson River Water Supplies Sampled and How Far Downstream of Fort Edward

- 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
U. Hudson (a)
U. Hudson (b)
U. Hudson (c)
L. Hudson
N
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).
QEA
GE
GENhmp:140
May 2004
U. Hudson (a)
U. Hudson (b)
U. Hudson (c)
L. Hudson
Bakers Falls
Fort Edward
Rogers Island E
Rogers Island W
Thompson Island Dam
Thompson Island (6 locations)
Schuylerville
Schuylerville (6 locations)
Albany
Albany/ Troy
Upper Mechanicville Dam (Lock #3)
Lower Mechanicville Dam (Lock #2)
Hoosic River
Stillwater
Stillwater (5 locations)
Stillwater Dam (Lock #4)
Waterford Dam (Lock #1)
Lock #1 (5 locations)
Waterford
Waterford (5 locations)
Mohawk River at Cohoes (5 locations)
Cohoes
Mohawk River
Troy Dam
Poughkeepsie
197
196
195
194
193
192
191
190
189
188
187
186
185
184
183
182
181
165
160
155
150
145
90
85
80
75
70
65

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:



Polychlorinated Biphenyl (PCBs)

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.

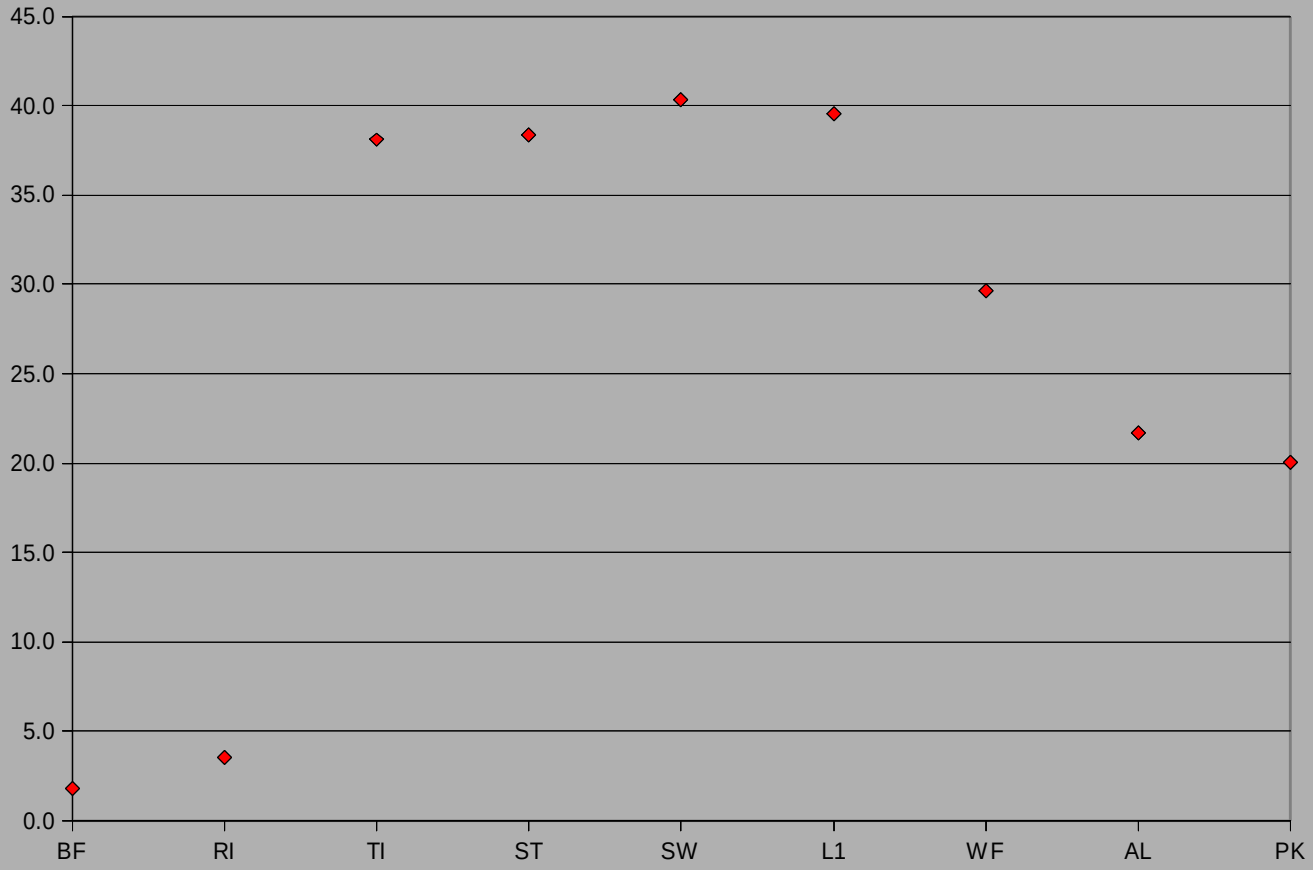
DOH PCBs Water Supply Monitoring Program Methodology

- **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.**

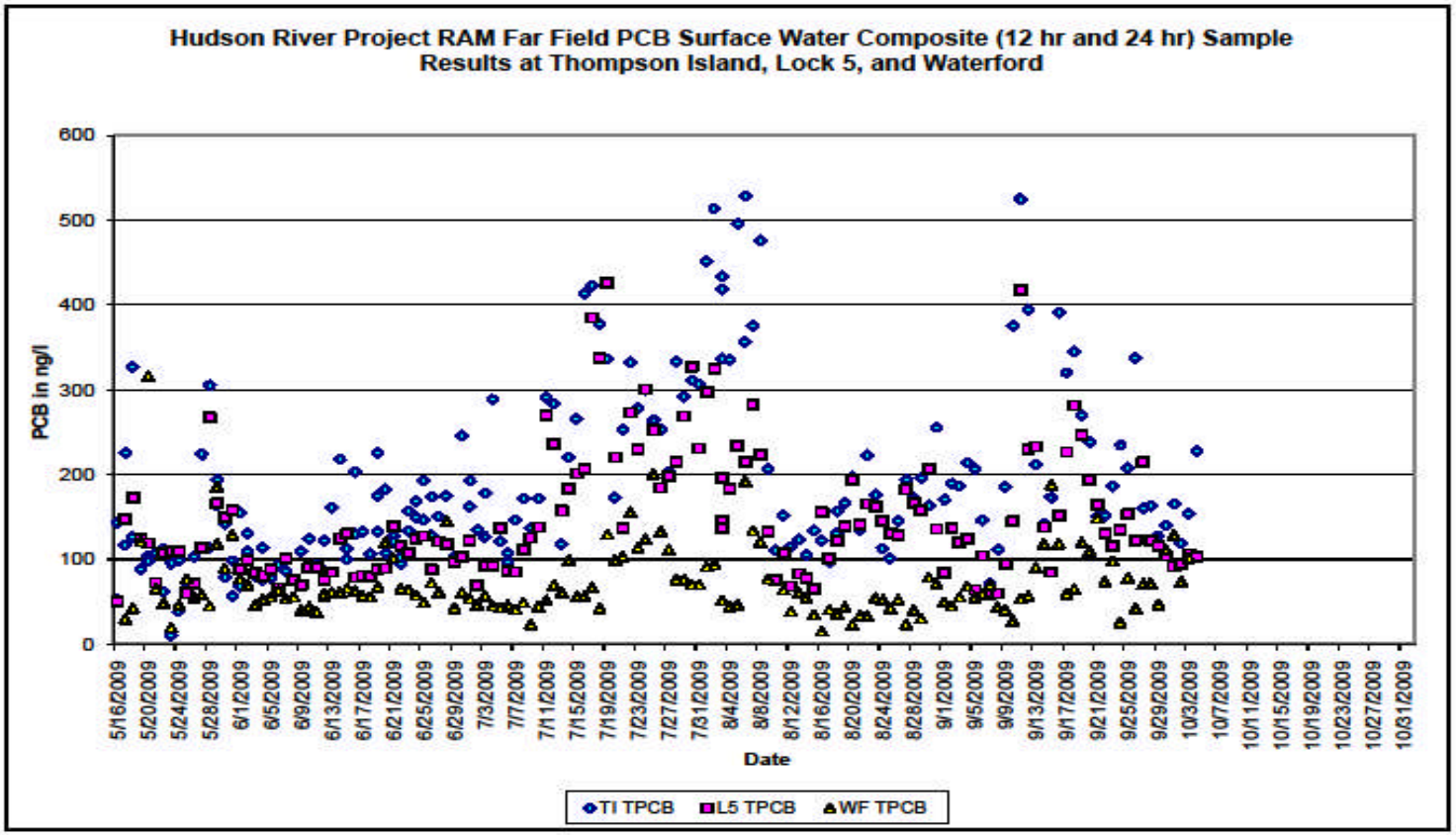
In-River PCBs Conditions (generalized)

- **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**

Mean Total at GE BMP Sample Locations from June 2004 to December 2008



During Dredging



Summary of Baseline Results

Location	Finished Drinking Water USEPA Method 508				Finished Drinking Water Green Bay Method				Raw Water Green Bay Method			
Upper River	**Sample number**	**Ave[a]**	**Min**	**Max**	**Sample number**	**Ave**	**Min**	**Max**	**Sample number**	**Ave**	**Min**	**Max**
Schuylerville	1	<5.1[b]	--	--	1	<9.34[c]	--	--	4	<9.34	<9.34	<9.3
Stillwater	12	140.3	97.3	200.9	12	133.2	89	186.6	12	130.3	81.9	164.3
Stillwater wells	--	--	--	--	--	--	--	--	10	88.8	42.3	140.0
Halfmoon	12	27.1	8.8	46	12	10.8	<9.34	23.1	12	25.4	12.9	57.1
Waterford	11	23.7	9.7	40.5	11	12.8	<9.34	72.2	11	28.2	11.9	51.6
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	--	--

[a]EPA 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.

Finished Water PCB (ng/L) levels During Dredging Monitoring from Aroclor Analysis

Location	# Samples	Mean	Min	Max
Green Island	9	8.3	<6.1[b]	33.7
Rhinebeck	9	23.0	<6.1	47.2
Port Ewen	9	22.7	<6.1	41.0
Poughkeepsie	9	20.1	<6.1	58.1

note--Stillwater sampled by us when GAC first put on then EPA took that over--our sampling and EPA sampling shows GAC is removing PCBs

Summary/Conclusions

- Baseline results and During Dredging results similar for the Water Suppliers-- All results below drinking water standard

- During Dredging monitoring was decreased from original plan since Waterford, Halfmoon are using Troy Water. Stillwater GAC is being monitored by EPA, we did in the beginning and showed that it is working.

- Agreement between the results of the two methods used, Aroclor and congener, both with low ppt detection limits

Summary/Conclusions

- 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.

Next Steps

- Finish Phase 1 Monitoring--write-up results
- Work with Supplies that may want to go back to the river
- Work to see what contingency measures/monitoring will be needed in Phase 2--

Questions?