

Delaware Estuary Sediment Quality Considerations for the RSM



Delaware River Basin Commission
DELAWARE • NEW JERSEY
PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

Delaware Estuary Regional Sediment
Management (RSM) Workshop

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This Presentation

- NY-NJ HEP Recommendations;
- Existing sediment data;
- Possible framework for considering sediment quality;
- Challenge Questions.

NY-NJ HEP Sediment Quality Recommendation Groups

- QL-1 – Ensure new sediments are clean
- QL-2 – Ensure new sediments remain clean
- QL-3 – Reduce Direct Exposure
- QL-4 – Reduce Transport of Contaminated Sediments to other Areas

NY-NJ HEP Recommended Actions

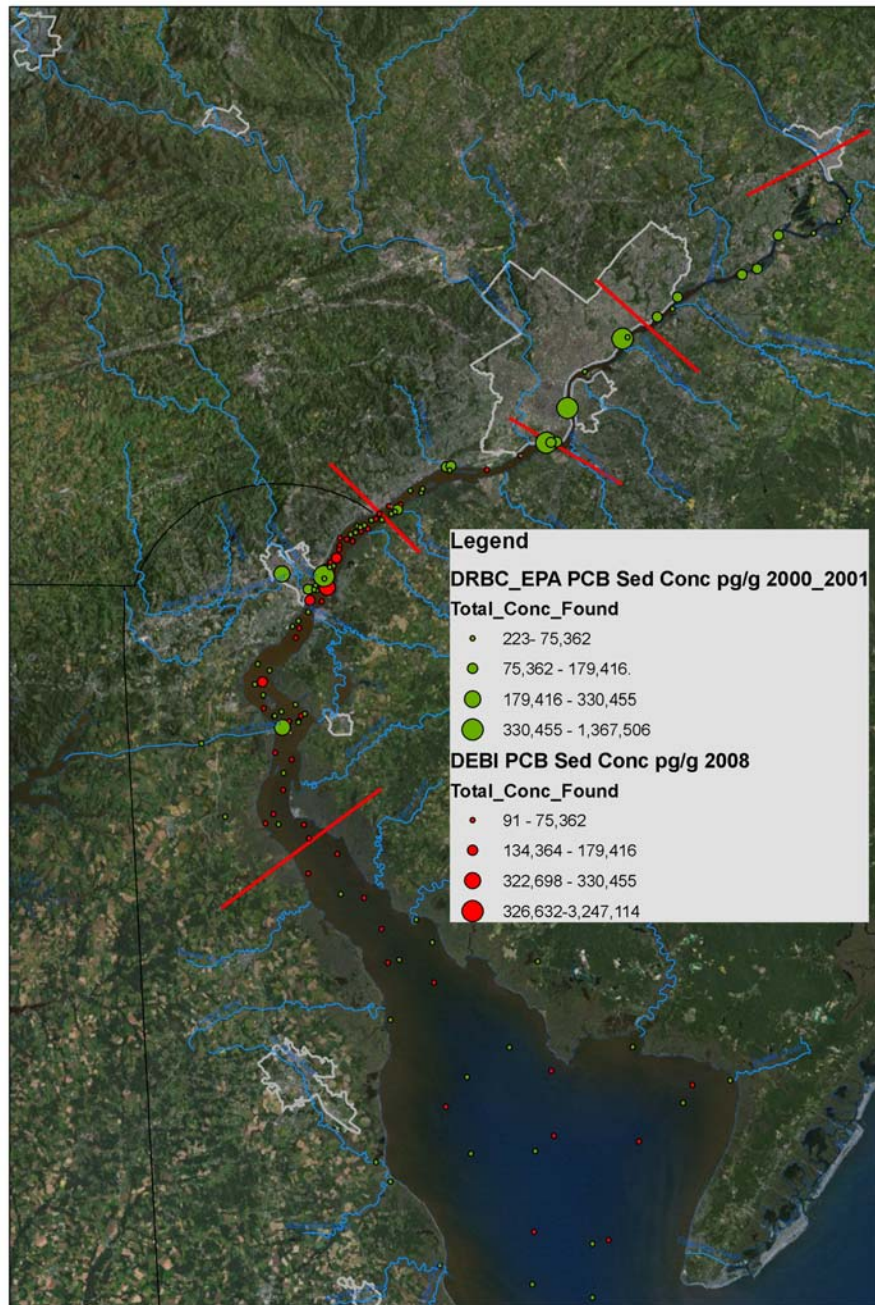
- Identify and reduce sources of pollution / contaminated sediment;
- Prioritize and complete cleanups (sediment, upland);
- Integrate TMDLs and contaminated sediment management;
- Engage and inform stakeholders (public, decision makers, upstream);
- Economic analysis of remediation, improved sediment quality;
- Ongoing monitoring, monitoring tools;
- Understand linkages to ecosystem health;
- Understand hydrodynamics and sediment transport.

What Contaminants Should we Consider?

Most Recent 303d Listings

<u>PA</u>	<u>NJ</u>	<u>DE</u>
Fish Consumption (PCBs)	PCBs	PCBs
	DDT	Chlorinated Pesticides
	DDD	
	DDE	
	Dieldrin	
	Chlordane	
		Dioxin
	Lead	
	Arsenic	Arsenic
	Cadmium	
	Copper	
	Mercury	Mercury
		Chronic Toxicity
	DO	DO
	Temperature	
		Bacteria
		Iron

Sediment PCB sample locations and relative concentrations



- Highest concentration from this data 3.24 mg/kg
- All results below TSCA threshold of 50 mg/kg



Sediment PCB Data Sets

<u>Data Set Description</u>	<u>Year Collected</u>	<u>Analytical Parameters</u>
<ul style="list-style-type: none"> • 16 samples collected by A.D. Little for DELEP 	1993	<ul style="list-style-type: none"> • 51 PCB congeners
<ul style="list-style-type: none"> • 15 samples collected by Versar for the Corps of Engineers analyzed for 	1996	<ul style="list-style-type: none"> • 75 PCB congeners
<ul style="list-style-type: none"> • 92 samples (73 in Zones 2 through 6) collected by NOAA 	1997	<ul style="list-style-type: none"> • 21 PCB congeners
<ul style="list-style-type: none"> • More than 10 core samples collected and analyzed for Cs-137 to determine sedimentation rates. • 59 sections from 5 core samples to be analyzed for 124 PCB congeners. 		<ul style="list-style-type: none"> • 124 PCB congeners
<ul style="list-style-type: none"> • 30 surface grab samples collected by EPA 	2000-2001	<ul style="list-style-type: none"> • 209 PCB congeners by Method 1668a • physical properties
<ul style="list-style-type: none"> • 51 surface grab samples collected by DRBC 	2001	<ul style="list-style-type: none"> • 124 PCB congeners by Method 1668a • organic carbon • chlorinated pesticides • metals • physical properties
<ul style="list-style-type: none"> • 3 surface grab samples collected in Mantua Creek 	2002	<ul style="list-style-type: none"> • 124 PCB congeners
<ul style="list-style-type: none"> • 12 cores collected by ANSP and College of Marine Studies Delaware and analyzed for CS137 to determine sedimentation rates • Eight cores have been analyzed for 124 PCB congeners 	2006-present	<ul style="list-style-type: none"> • 124 PCB congeners
<ul style="list-style-type: none"> • 52 surface grab samples collected by the Partnership for the Delaware Estuary 	2008	<ul style="list-style-type: none"> • 209 PCB congeners by Method 1668a • Dioxin/Furans were analyzed by EPA method 1613B for 17 individual compounds and for total tetra, penta, hexa, hepta and octa homologs • physical properties

Sediment to other endpoints



Aquatic Life Criteria



Wildlife Criteria



Human Health Criteria

Water Column



Partitioning or Water Quality Model

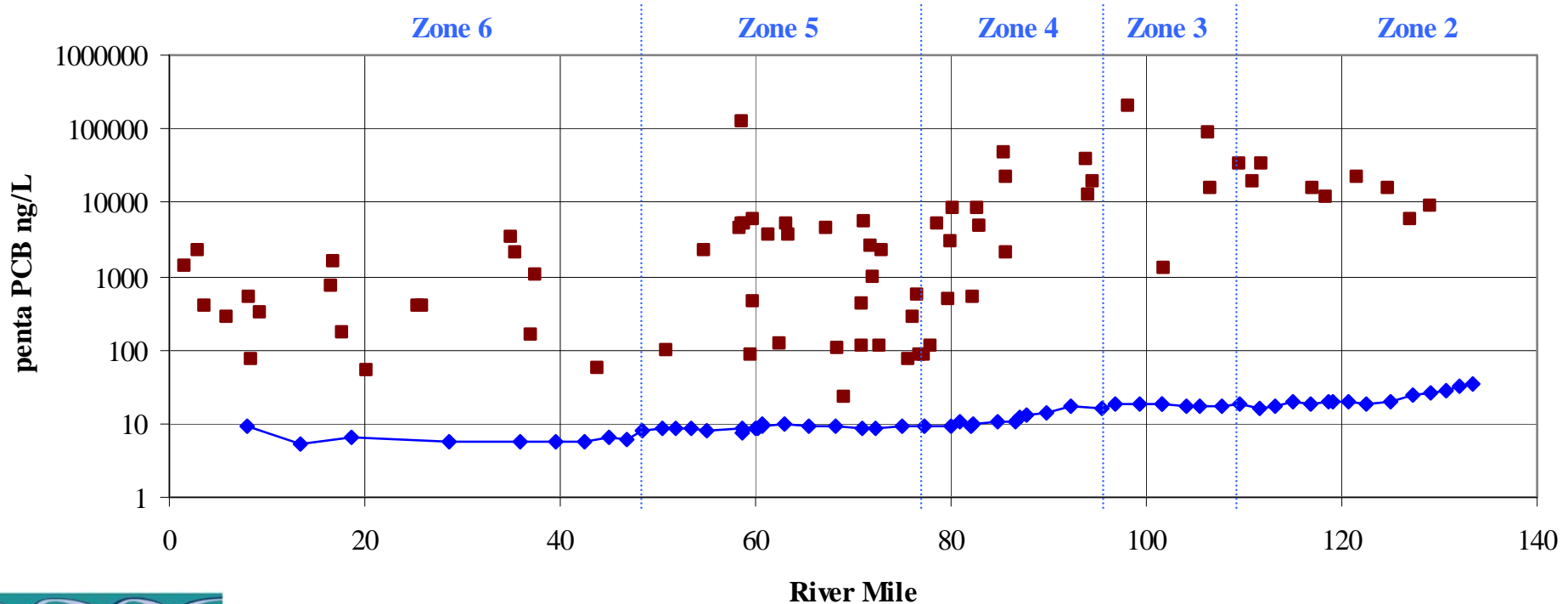
BCF or BAF
Bioconcentration
Or
Bioaccumulation
factor

BSAF
Biota / sediment
Accumulation
factor

Sediment

Current sediment PCB concentrations compared to criteria equilibrium

Current and Equilibrium penta PCB concentration (nano-grams per liter) to meet WQC in the Delaware Estuary



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Challenge Questions



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