

ATTACHMENT G

Housatonic River Presentation

December 7, 2012



imagination at work

Framework for Four Party Discussions

August 20, 2012 – Principals Meeting

- Technical teams to develop details of Status Report Concept, narrow disagreements
- Mid-course Principals meeting

September/October/November – Technical group meetings:

- Footprint – reached agreement on hierarchy, narrowed number of EAs with ecological issue; some issues remain
- River sediment – agreement on scope; consensus that caps need to be environmentally protective
- River banks – identified location of bank work and risks
- Backwaters – discussion and analysis of impact that backwaters have on river
- Addressed modeling issues

Issues remain, but significant
progress made on key project
elements

Further Guidance Needed to Resolve Remaining Issues Complete Discussions

Mid Course Principals Meeting intended to provide direction

Five remaining Issues:

- Work in sensitive ecosystems (Core 2 & 3 Areas) & ...balance between benefits and impacts?
- Downstream impoundments... necessary to protect human health and the environment?
- Woods Pond... scope of work necessary to protect human health and the environment?
- Environmentally appropriate disposal options
- Performance Standards

Rest of River RCRA Permit Criteria

General Standards

- Overall Protection of Human Health and Environment
- Control of Sources of Releases
- Compliance with Federal/State ARARs

Selection Decision Factors

- Long-Term Reliability and Effectiveness
- Attainment of IMPGs
- Reduction of Toxicity, Mobility, or Volume of Wastes
- Short-Term Effectiveness
- Implementability
- Cost

Concept Principles

- A remedy that is protective of human health and the environment
- Significant removal in river and floodplain to allow foreseeable future uses consistent with EPA Risk Assessment assumptions
- Preserve floodplain forest, vernal pools, backwaters and banks to maximum extent possible consistent with EPA human health goals and RCRA permit criteria
- Further reduce downstream transport through removal and capping as necessary
- Environmentally appropriate disposal

Discussions providing framework for comprehensive remedy that can achieve all parties' objectives

River Sediment

- Implement Status Report Concept in Reaches 5A, 5B and 5C for sediment removal
- Design environmentally protective caps that meet EPA requirements
- Minimize river disruption using least intrusive protective cap based upon river conditions
- Work with EPA to determine areas in which work can or should be done “wet”

Expect model will predict fish and PCB flux outcomes downstream substantially same as Status Report Concept

River Banks in Primary Study Area

- Stabilize up to 3.5 miles of riverbank
- With agreement from MA, work on banks in Core Area 1
- Work with EPA on ecologically sensitive stabilization approach, but recognize inevitable ecological impacts
- Work with EPA to determine where “wet” dredging appropriate

Expect model will predict fish and PCB flux outcomes downstream substantially same as Status Report Concept

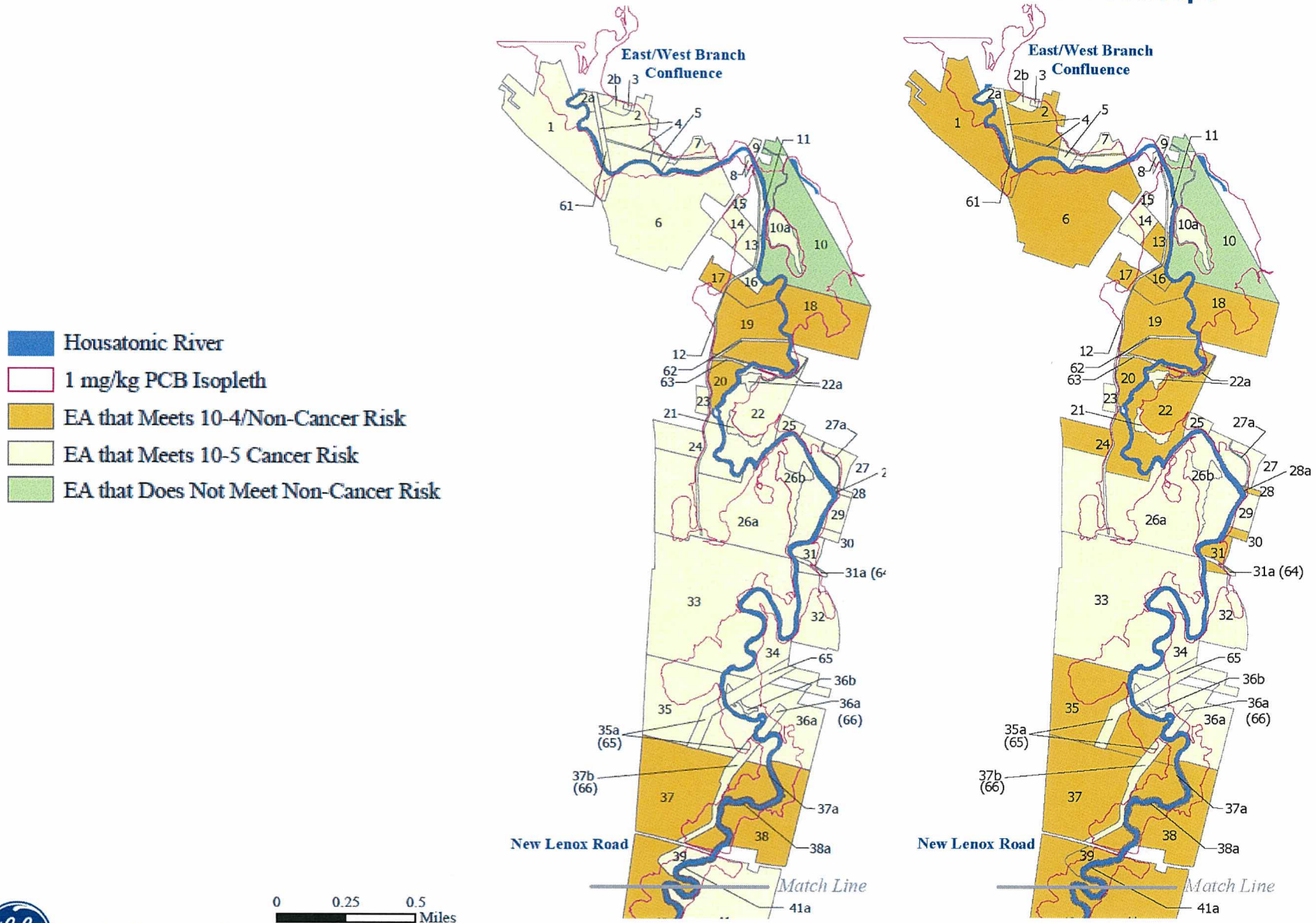
Floodplain

- Consistent with EPA risk range meet 10^{-5} direct contact excess cancer/non-cancer
 - Minimize & mitigate to Core Areas 1 & 2
 - Protect vernal pools in PSA
 - Status report: 78% by area; 90% by EA
 - Concept: 65% by area; 72% by EA
- Removal in EAs in Core Area 1 or Core Area 2 to meet EPA 10^{-4} direct contact excess cancer IMPG and non-cancer HI=1 everywhere else
- No removal based solely on EPA amphibian IMPG
 - Adhere to experts' conclusions, including the Commonwealth's, that ecological damage would outweigh theoretical benefit
- Agreed on exception for EA 10

IMPG Attainment (Reaches 5A/5B)

FP 4 MOD






GE Concept

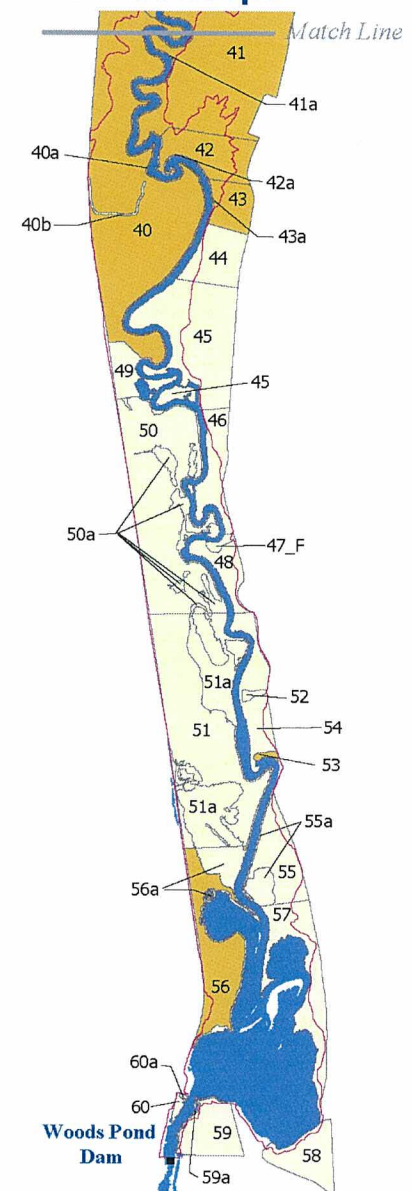
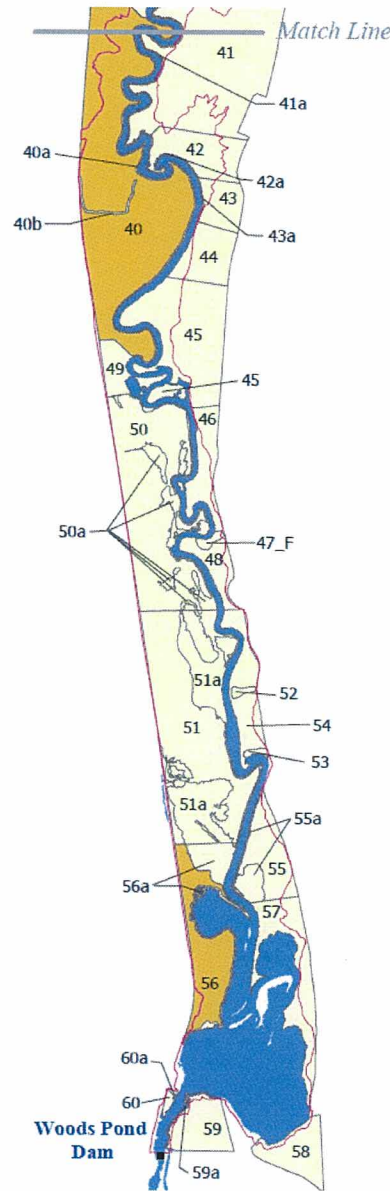


IMPG Attainment (Reaches 5B/5C/6)

FP 4 MOD

GE Concept

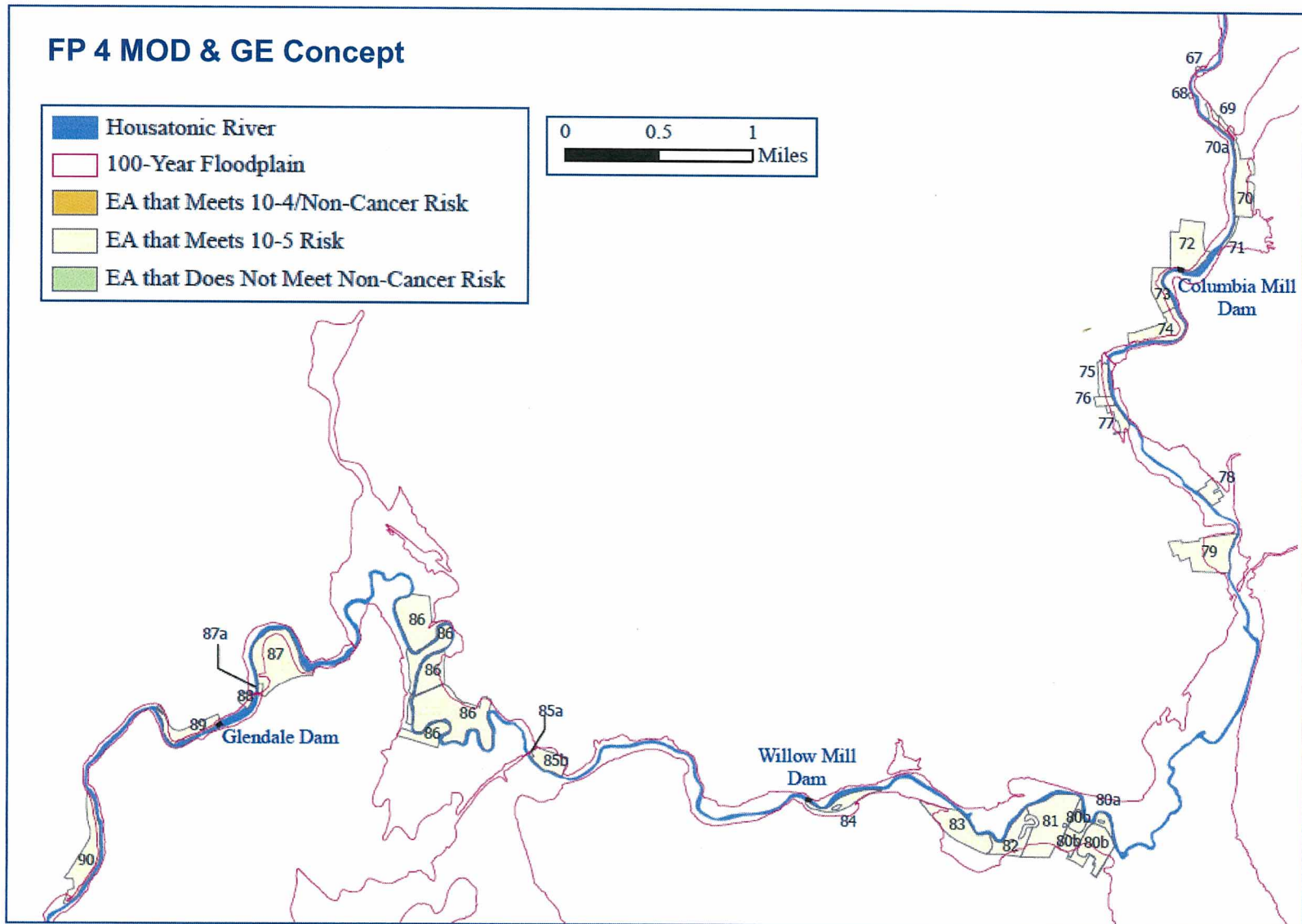
-  Housatonic River
-  1 mg/kg PCB Isopleth
-  EA that Meets 10-4/Non-Cancer Risk
-  EA that Meets 10-5 Cancer Risk
-  EA that Does Not Meet Non-Cancer Risk



0 0.25 0.5 Miles



IMPG Attainment (Reaches 7/8)

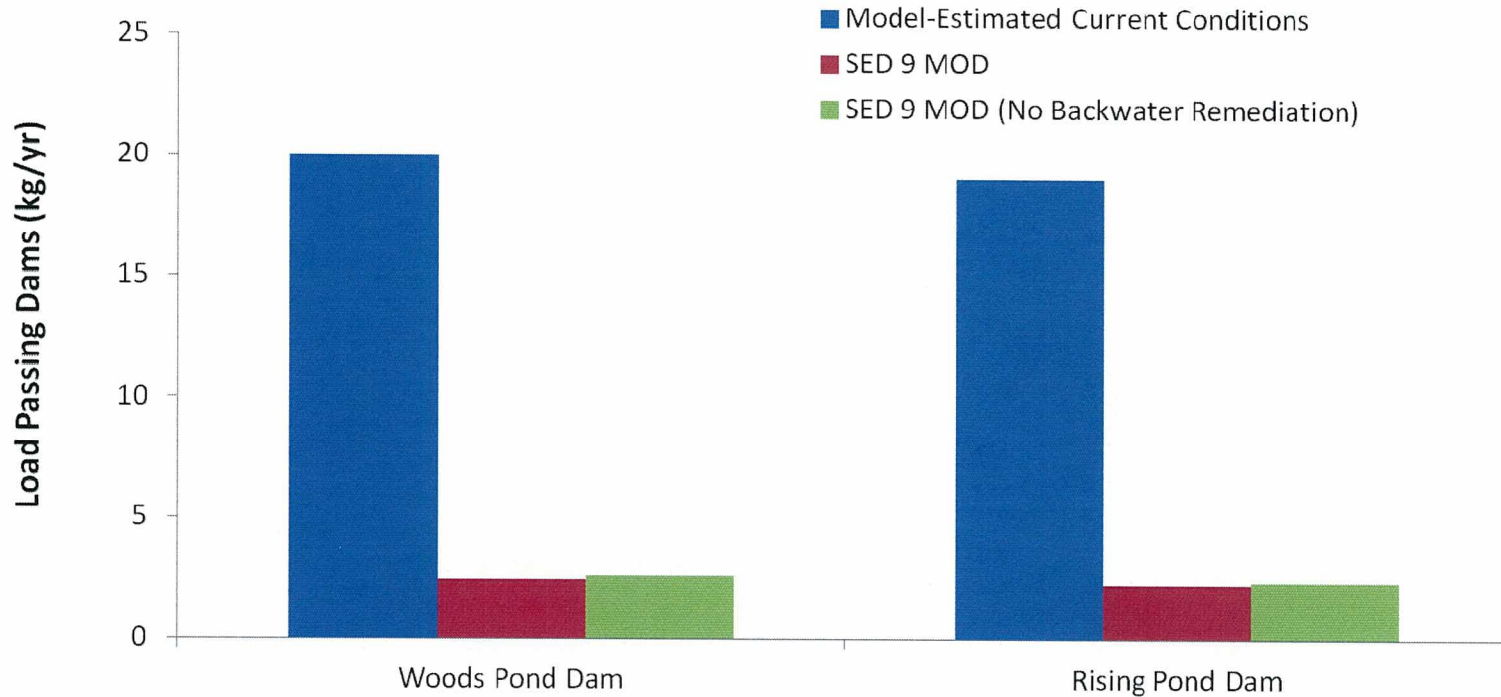


Backwaters

- High velocity areas: sediment removal and capping to prevent downstream transport
- Large backwaters: removal to achieve surface-weighted average PCB concentration within EPA's amphibian IMPG range, not to exceed 50 ppm top foot
- Small backwaters: thin-layer capping to achieve 5 ppm average surface PCB concentration
- No removal in Core Area 1 unless required to remove sediments with PCB concentration greater than 50ppm

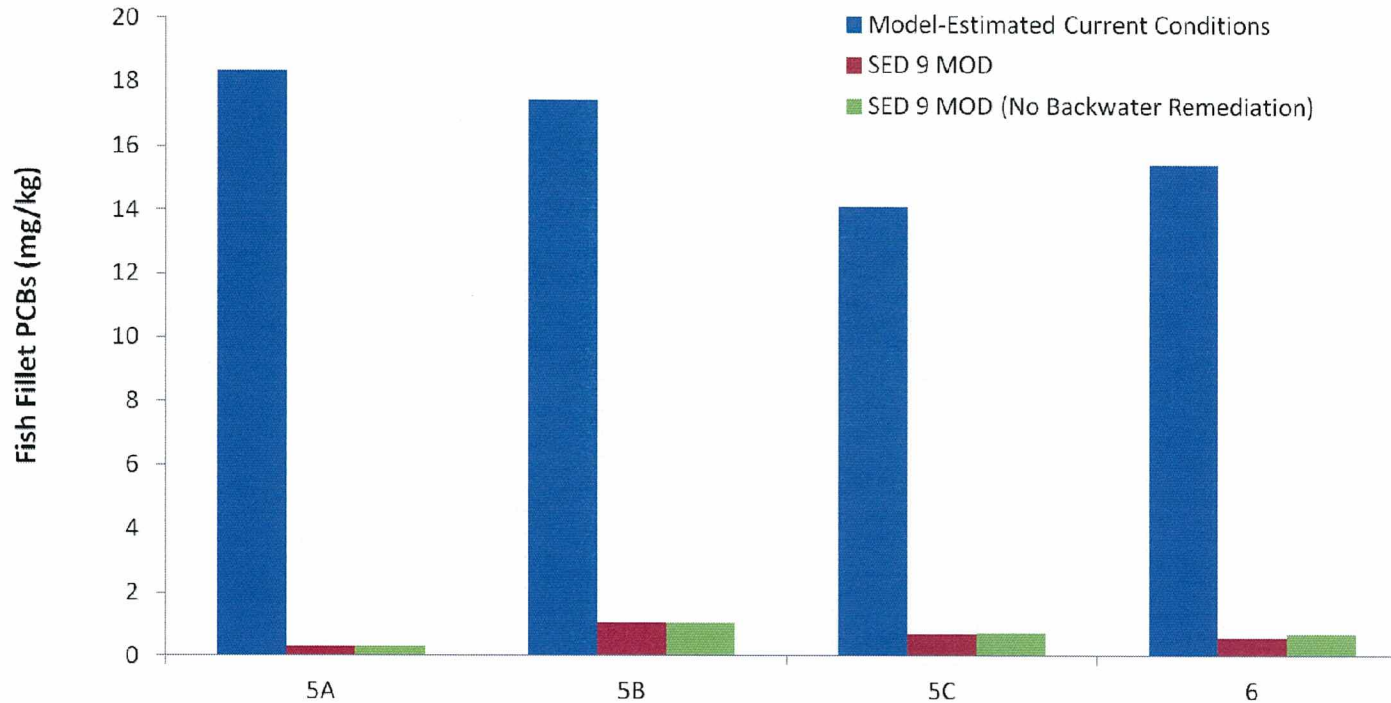
Expect model will predict fish and PCB flux outcomes downstream substantially same as Status Report Concept

Backwaters: Not Source for Downstream PCBs



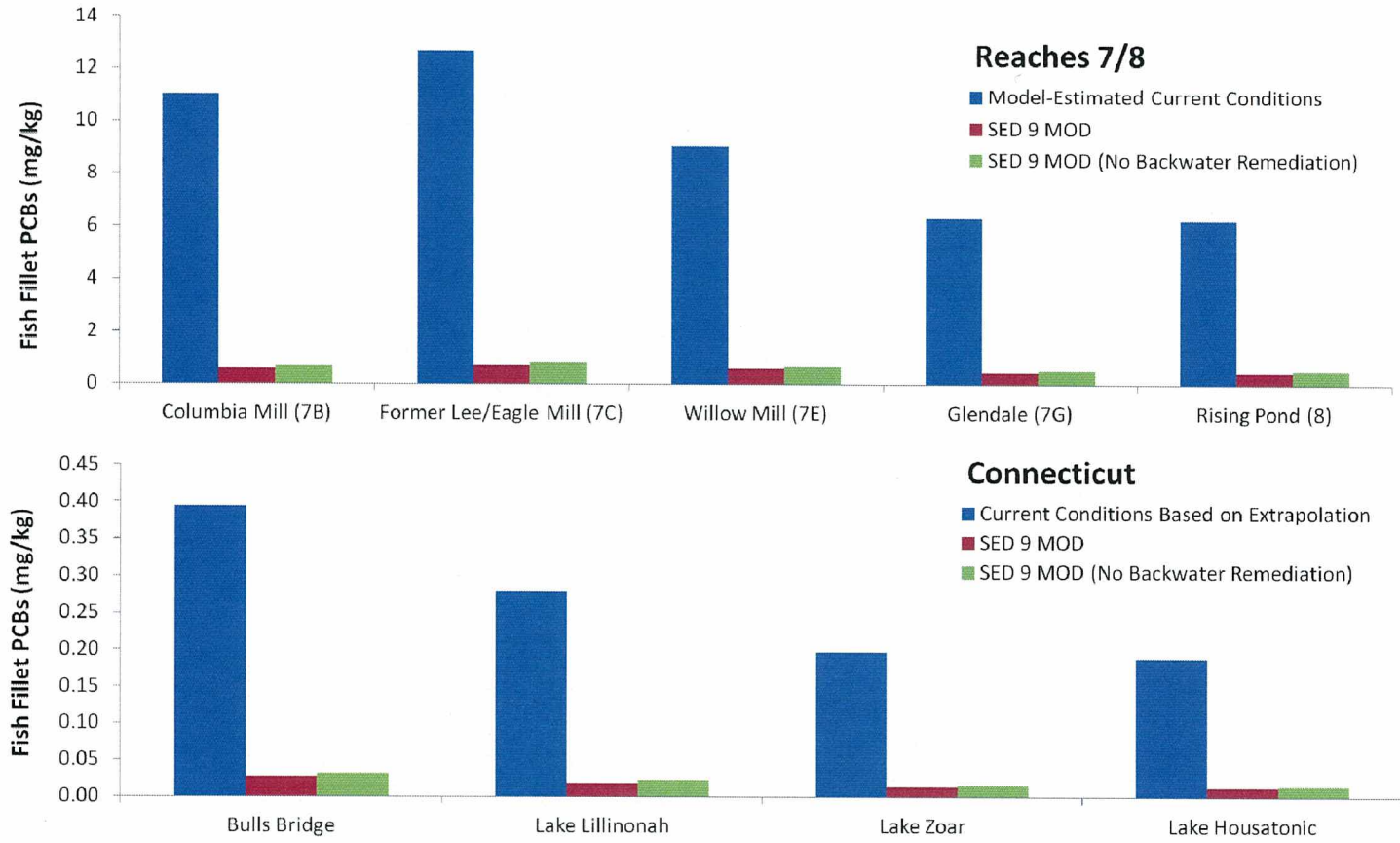
After 52 years, backwater remediation does not reduce PCB load below dams

Backwaters: No Significant Impact on Fish



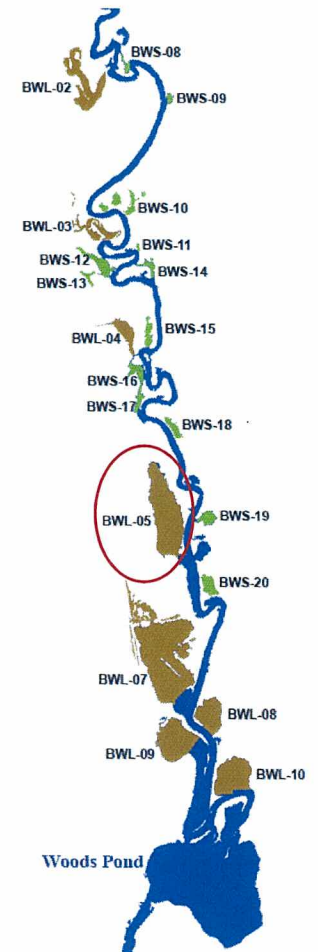
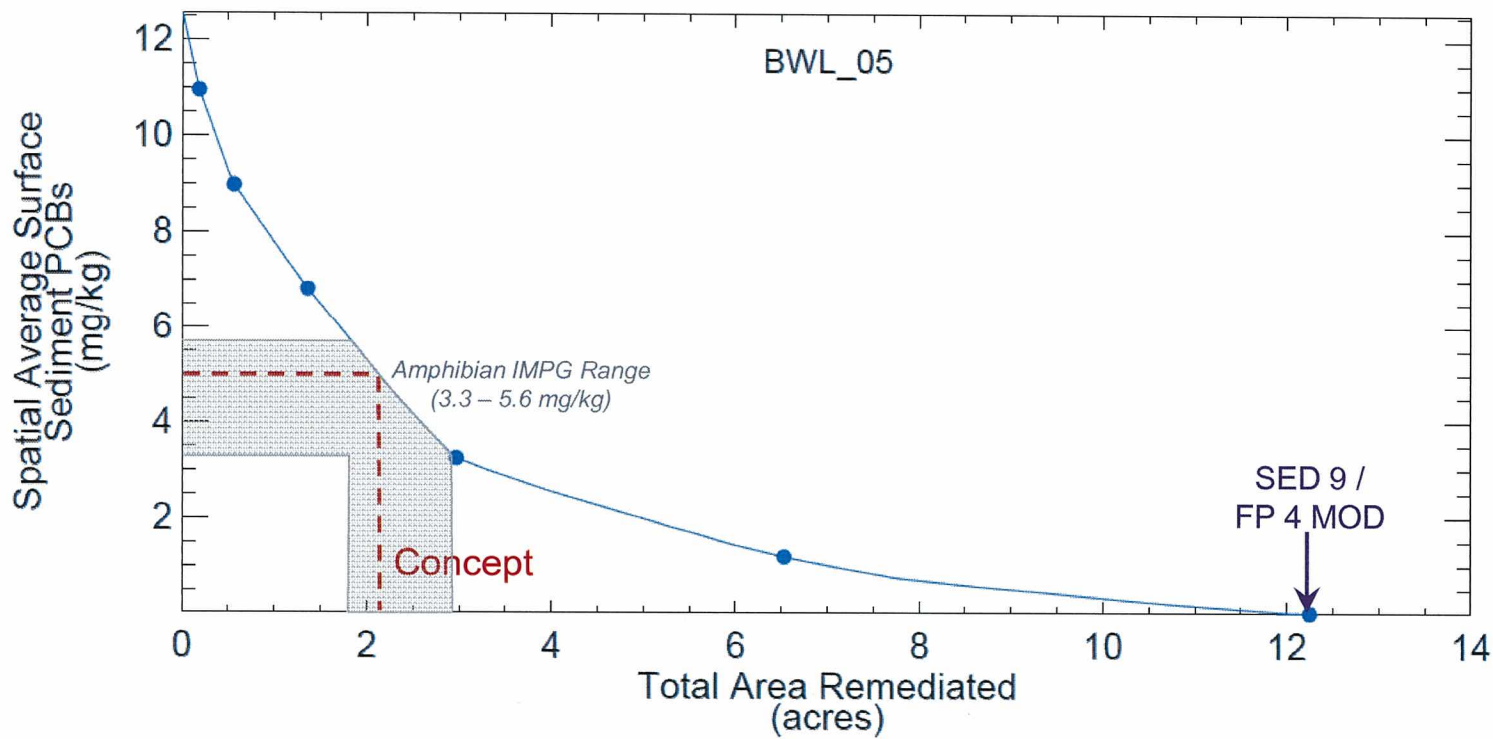
After 52 years, backwater remediation had no impact on fish in study area

Backwaters: No Effect on Reaches 7/8 and CT

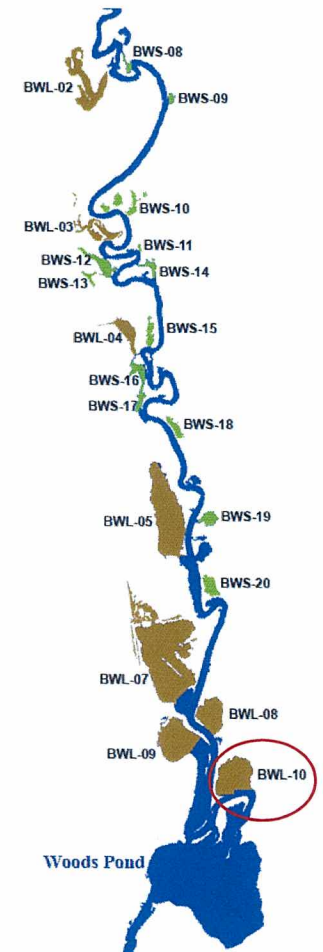
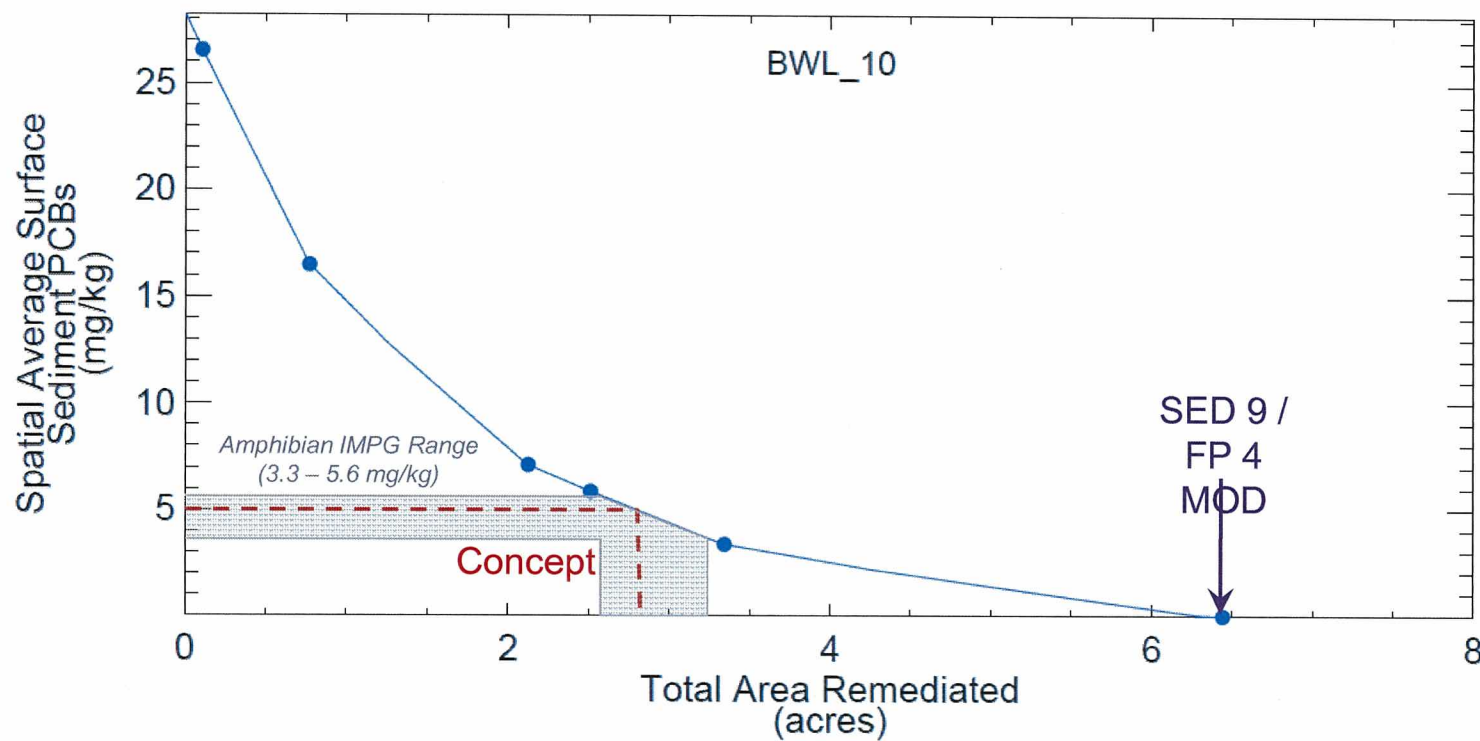


After 52 years, backwater remediation has no appreciable impact on down river fish

Alternative Approach Mitigates Damage; Protects Ecosystem



Alternative Approach Mitigates Damage; Protects Ecosystem



Woods Pond

- Targeted removal/capping to ensure protection of human health and environment
- Remove nine inches of sediment in shallow areas of Woods Pond and place nine inch cap. Place nine inch cap in deep area of the Pond
- Capping achieves same degree of reduction of PCB levels in fish

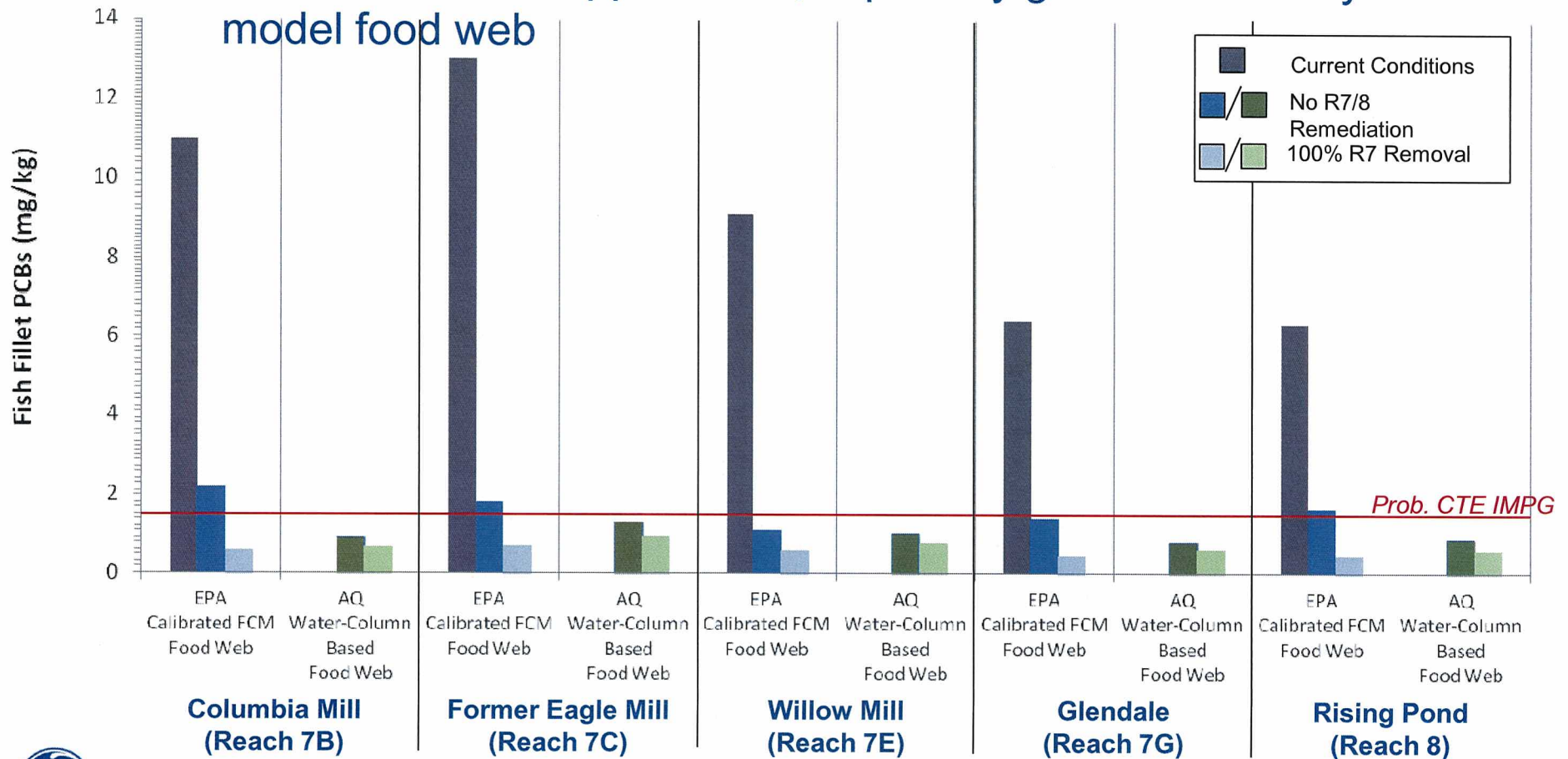
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Downstream Impoundments

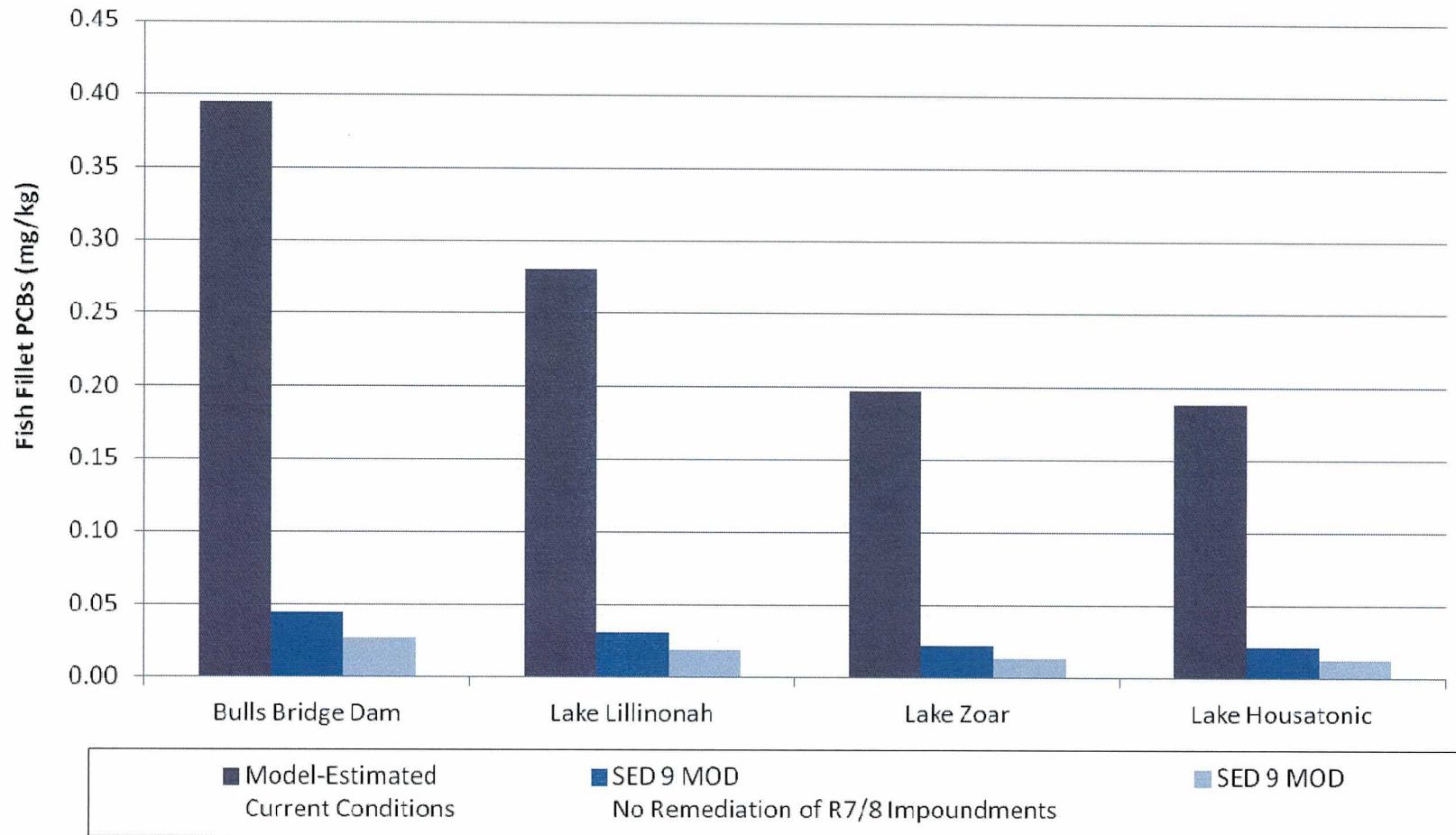
- EPA's model demonstrates that fish IMPG is attained after upstream work in certain Reach 7/8 impoundments
- Significant likelihood that IMPGs will be met in all impoundments without removal in reaches 7/8
- Conservative assumption: IMPG potentially missed by ~0.5 ppm in three small impoundments
- All models indicate fish IMPG attainment in CT without any removal
- Mass removal project in downstream impoundments not justified based upon available data and IMPGs

Model Sensitivity Results

- **Downstream Impoundment fish levels (at end of 52-year projection)**
 - Model does not support work, especially given uncertainty in model food web



Remediation of Reach 7/8 Impoundments Likely Provides No Real Benefit to CT



Disposal Options

- On-site disposal is protective of human health and the environment
 - Permanently isolate PCB-containing material in secure landfill outside floodplain
 - Lower greenhouse gas emissions
 - On-site disposal v. off-site Disposal – 13,400 tonnes v. 90,600 tonnes (truck) or 42,600 tonnes (rail)
- Off-site disposal magnifies safety and traffic impacts:
 - 98% fewer off-site truck for trips on-site disposal

**On-site disposal meets standard with greater safety,
fewer ecological impacts at lower cost**

Performance Standards

- EPA should establish engineering and design metrics to measure project, i.e. scope and process design and ultimate removal
- Post remedy measurements for 5 year review of remedy to ensure protection of human health and the environment
- Open-Ended performance standards cannot be evaluated to comply with Permit Criteria

Statutory Five Year Review is proper process to ensure protectiveness and provides appropriate regulatory review

Effective Remedy, Balanced Impacts, Costs

- Achieves same results in river channel:
 - Reduces PCB concentrations in fish and other biota
 - Reduces of risk of downstream transport
- Protective of future use of floodplain consistent with EPA's Risk Assessment:
 - Achieves EPA's acceptable floodplain human health IMPG range
- More protective of Rest of River ACEC
 - Smaller footprint with same benefit
 - Preserves vernal pools
 - Minimizes impact to riverbank
- Work in backwaters and Woods Pond achieves similar fish IMPGs, flux reduction
- No removal for removal sake
- Consistent with permit criteria

Next Steps

- Further refinement of cap designs.
- Clarification of floodplain issues including MA concerns.
- Further refinement of “wet” excavation and potential approaches.
- Further refinement of backwater concept.
- Performance of MESA evaluation.
- Discussions concluded by end of January.