SRST
Overview of SRST ROPs 2015 Activities and Discussion

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SRST ROPS Activities 2015

1. **Design and implement Phase I Interim Measures for SR AOC4 (Anchor QEA / AECOM)** Objective: Prepare preliminary and final design for RRM 0 to 2
   - ROPs Updates: Feb, May, Aug, Oct, Dec
2. **Enhanced Adaptive Management Model (Christy Foran, USACE)**
   Objective: Complete spreadsheet model and training to help define and facilitate the SR adaptive management process.
   - ROPs Updates: Aug, Oct
3. **Dynamic Mercury Cycling Model (Reed Harris)**
   Objective: Further refine the conceptual model and mass balance for Hg and MeHg in the aquatic environment under baseline flow and storm conditions.
   - ROPs Updates: May, Jul, Oct, Dec
4. **Reactive Capping Simulations (Danny Reible, Texas Tech University)**
   Objective: Identify capping design element parameters through laboratory mesocosms and modeling.
   - ROPs Updates: Oct or Dec
5. **Characterization /Treatment of Sediment / Soil (Carol Ptacek, Waterloo)**
   Objective: Characterize the leaching behavior of SR soil and sediment and test treatments that can be utilized in the South River.
   - ROPs Updates: Jul, Oct, Dec?

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SRST ROPS Activities 2015

6. **Aquanty HydroGeoSphere Modeling (Steve Berg, Aquanty)**

   Objective: Estimate the post-storm volume of bank face seepage and GW flow to assist in bank stabilization design

   - ROPs Updates: Feb, May, Oct**

7. **Pore Water Measurements (Danny Reible, Texas Tech)**

   Objective: Further explore use of the DGT probes and voltammetry to increase understanding of the bioavailable pool of mercury (methylmercury production) and geochemical processes in the South River.

   - ROPs Updates: Oct or Dec

8. **Floodplain Soil Amendment Pilot (Ceil Mancini, Bill Reese, AECOM)**

   Objective: Test the efficacy of biochar application in floodplain soils to reduce uptake or Hg or MeHg by biota.

   - ROPs Updates: May, Aug, Dec

10. **Stable Isotope Analysis (Joel Blum, U Michigan)**

    Objective: Explore stable Hg isotopes as a tool for forensics and Hg fate and transport

    - ROPs Updates: Feb, Jul, Dec

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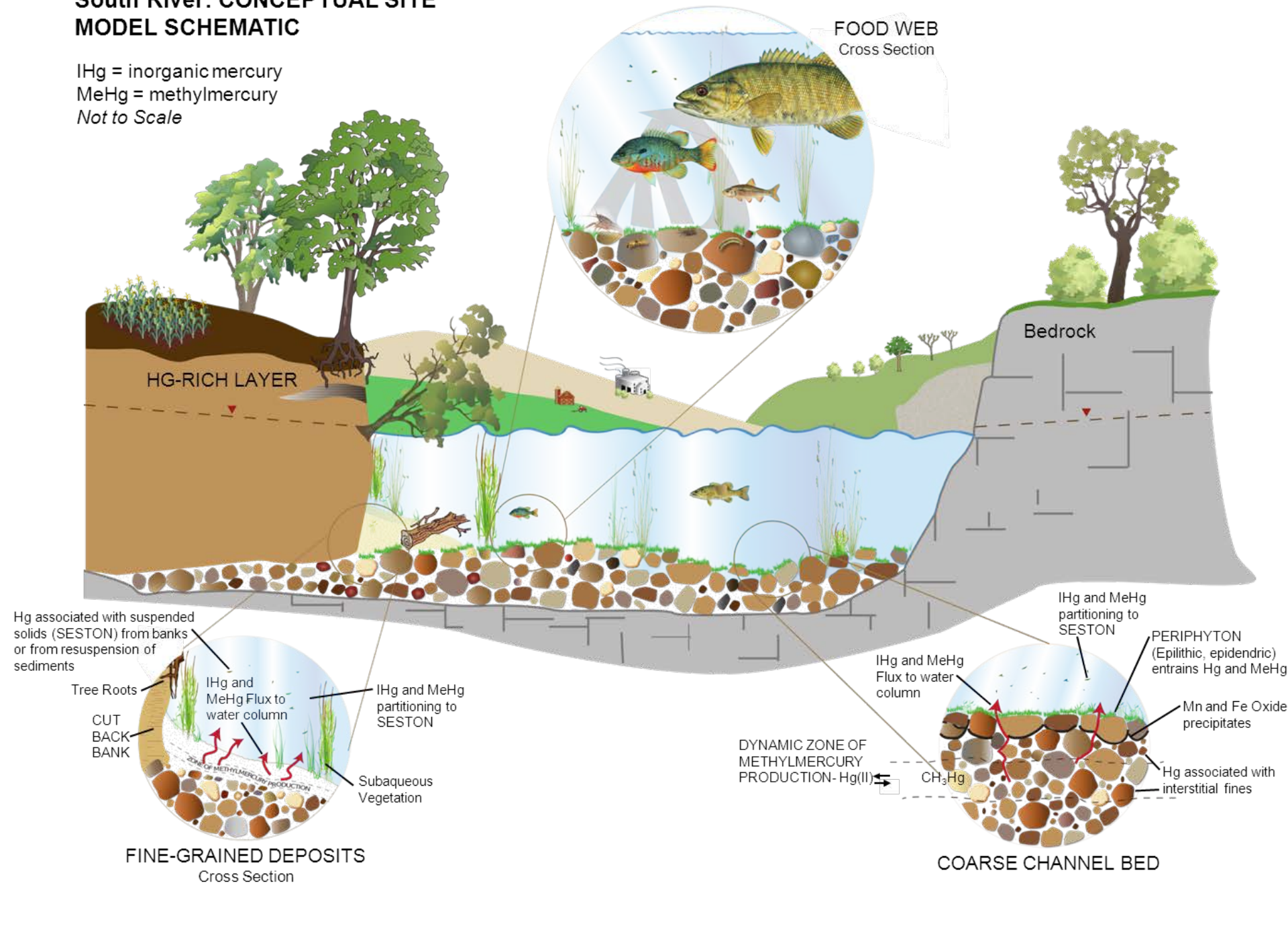
**Loading Analysis (leaching): Dyer, Reible, Landis

South River: CONCEPTUAL SITE MODEL SCHEMATIC

IHg = inorganic mercury
MeHg = methylmercury
Not to Scale



Discussion

- Do we have appropriate coverage of the pressing technical issues? vis a vis
  - Short-term remediation
  - Critical aspect of the conceptual model

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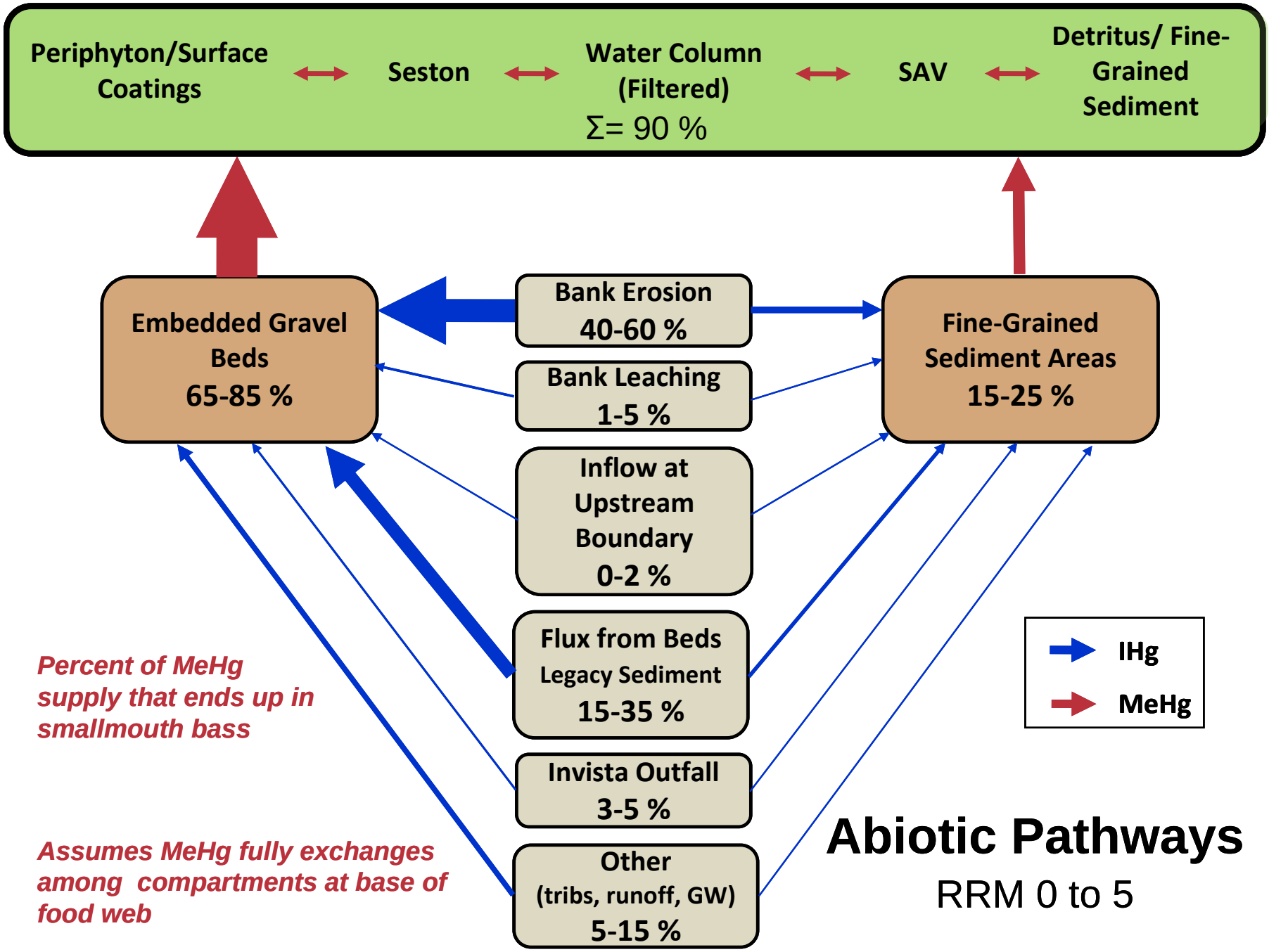
Periphyton/Surface Coatings
Seston
Water Column (Filtered)
Σ= 90 %
SAV
Detritus/ Fine-Grained Sediment
Embedded Gravel Beds
65-85 %
Bank Erosion
40-60 %
Bank Leaching
1-5 %
Inflow at Upstream Boundary
0-2 %
Flux from Beds
Legacy Sediment
15-35 %
Invista Outfall
3-5 %
Other
(tribs, runoff, GW)
5-15 %
Fine-Grained Sediment Areas
15-25 %
IHg
MeHg
Percent of MeHg supply that ends up in smallmouth bass
Assumes MeHg fully exchanges among compartments at base of food web
Abiotic Pathways
RRM 0 to 5

Biotic Pathways: Updated

Smallmouth Bass

Top Down Approach (*DRAFT*)

Emphasizes relative importance of final MeHg pathways to smallmouth bass.

Piscivorous Fishes
Smallmouth Bass
Σ = 100%

Invertivorous Fishes
Redbreast Sunfish
5-10%

Omnivorous Fishes
Forage Fish
50-55%

Invertivorous Aquatic Invertebrates
Dragonfly and Damselfly
1-5%

Terrestrial Invertebrates
Ant, Beetle, and Spider
1-5%

MeHg

Omnivorous Aquatic Invertebrates
Caddisfly
1-5%

Omnivorous Aquatic Invertebrates
Crayfish
20-25%

Detritivorous / Herbivorous Aquatic Invertebrates
Mayfly
5-10%

Detritivorous Aquatic Invertebrates
Midge
1-5%

Periphyton / Surface Coatings ↔ **Seston** ↔ **Water Column (Filtered)** ↔ **SAV** ↔ **Detritus / Fine-Grained Sediment**

90%