



AOC 4 Monitoring Data Review

Former DuPont Waynesboro Site

December 11, 2018

AECOM

Agenda

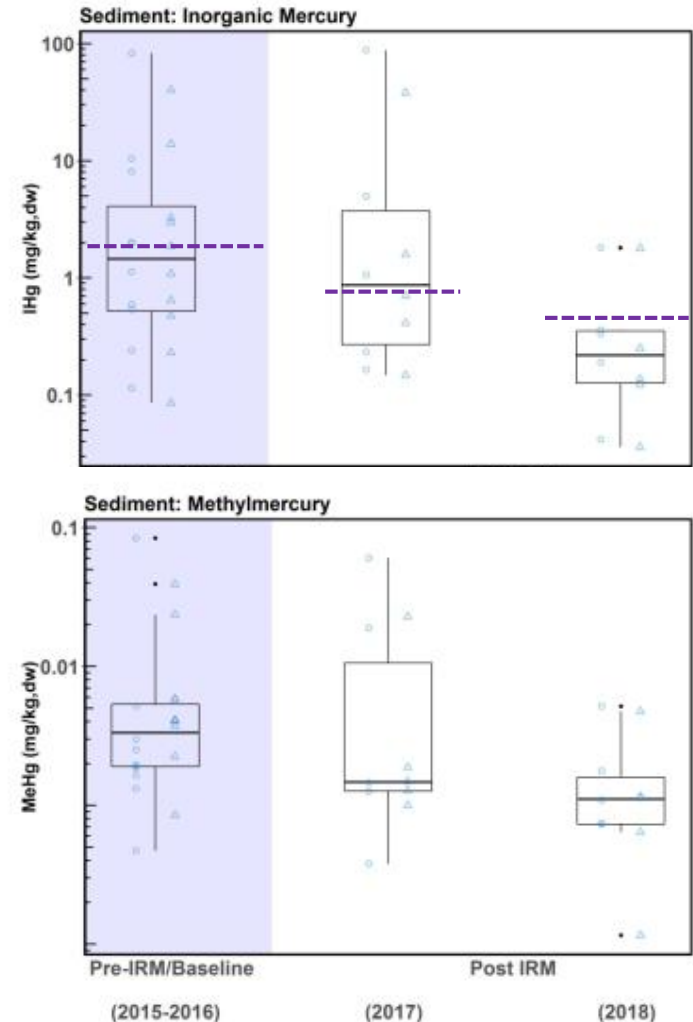
- Short-term monitoring data
- Long-term monitoring
 - Trends
 - Hypotheses
 - Surface water modeling
- Findings



Short-Term Monitoring - Sediment

- Decreasing IHg and MeHg concentrations in bulk sediment at remediated BMAs
- Post-IRM bulk sediment IHg concentrations similar to those on particles in water column
- Similar declines not observed at non-remediated BMAs

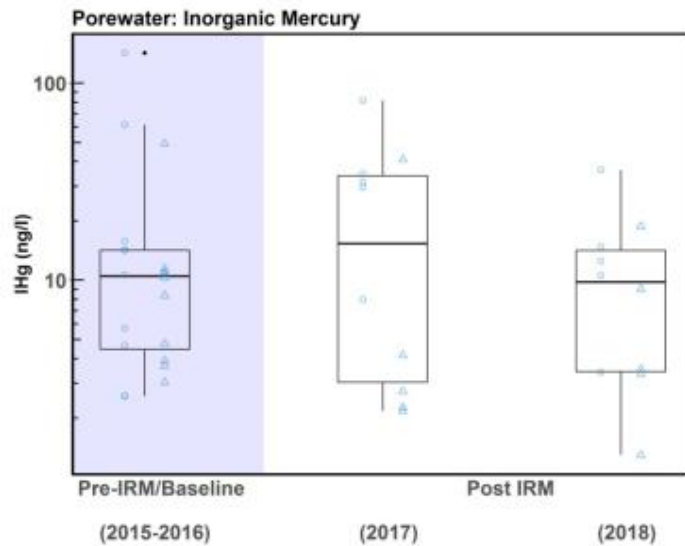
Constitution Park



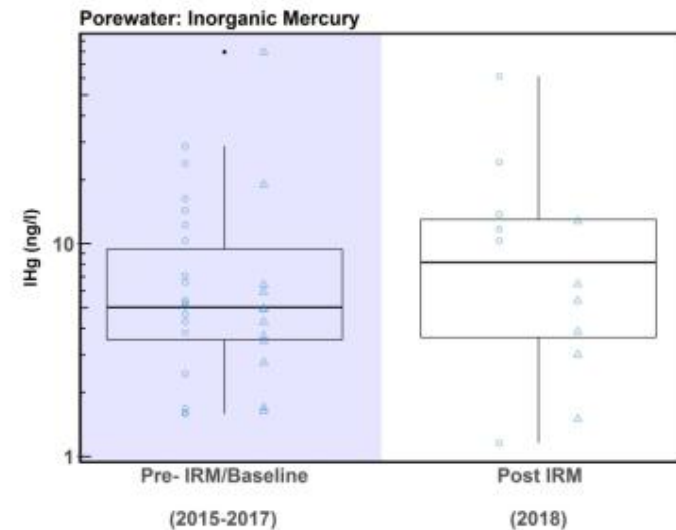
Short-Term Monitoring – Pore Water

- Pore water IHg concentrations decreasing after initial post remediation 'bump' at Constitution Park

Constitution Park

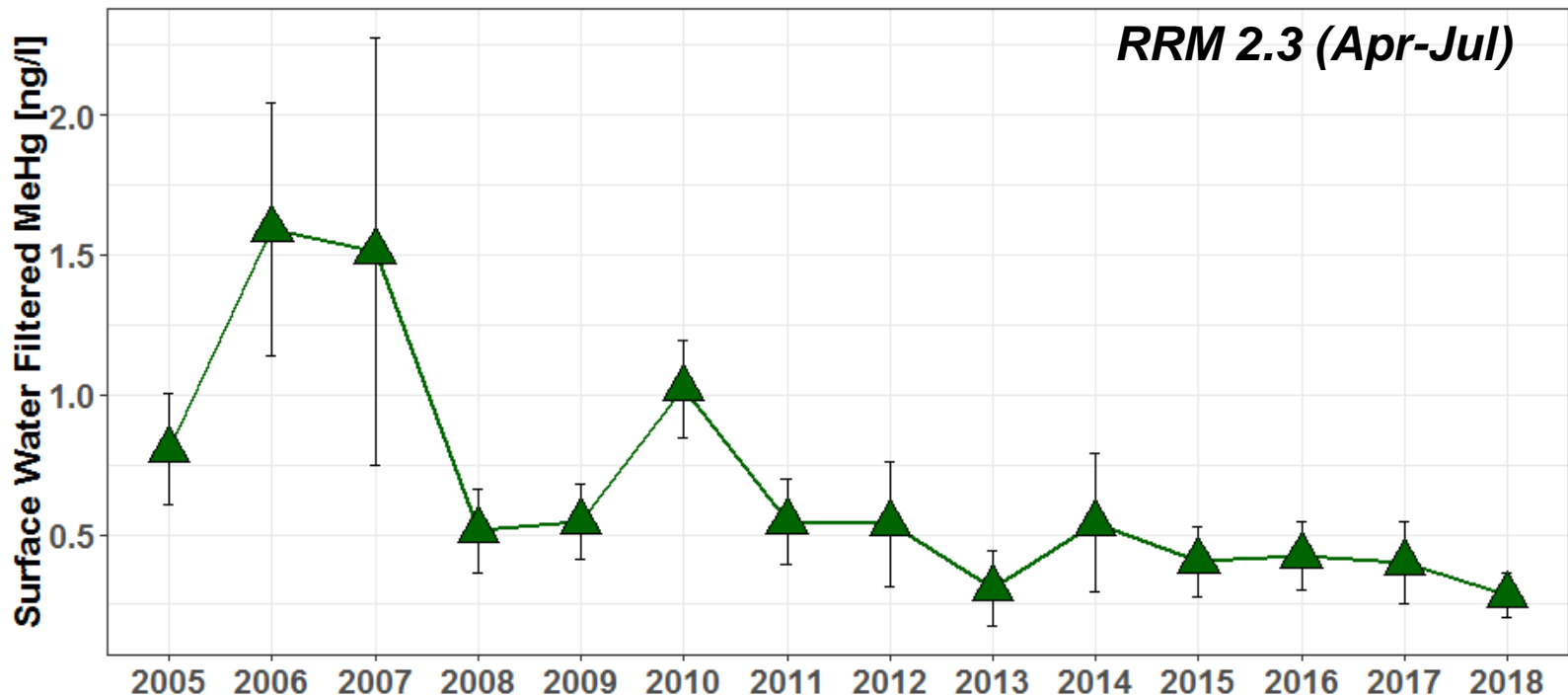


City Shops

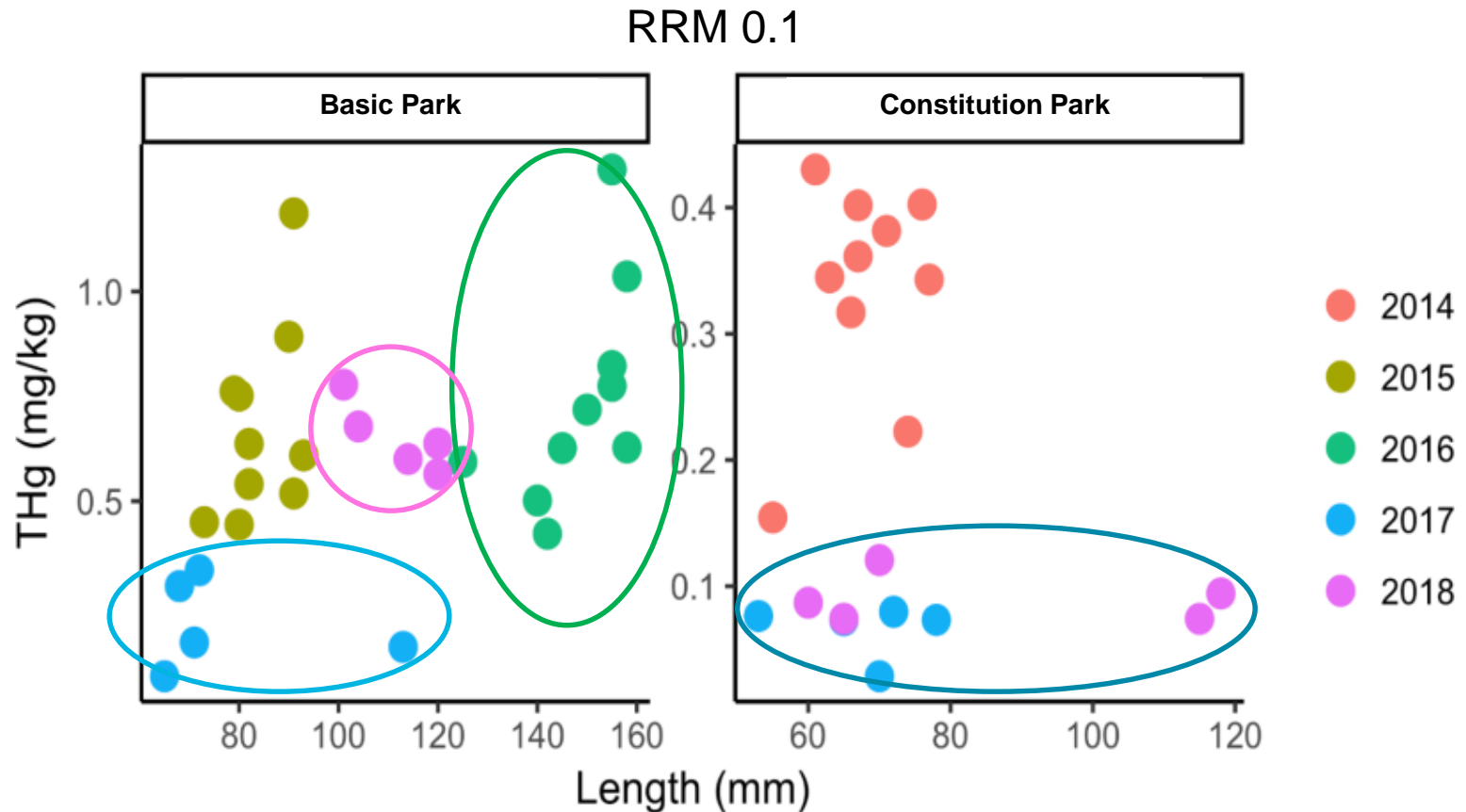


Surface Water Data

- Declining FMeHg concentrations in spring
- Important time period for methylation and YOY exposure



Young-of-Year Smallmouth Bass



- Larger variation in fish size from year to year
- Significant year to year variation in YOY THg concentrations
 - No variation in reference areas

Monitoring Data Trends

- Max concentrations in bulk sediment IHg at remediated BMAs trending toward interstitial sediment concentrations

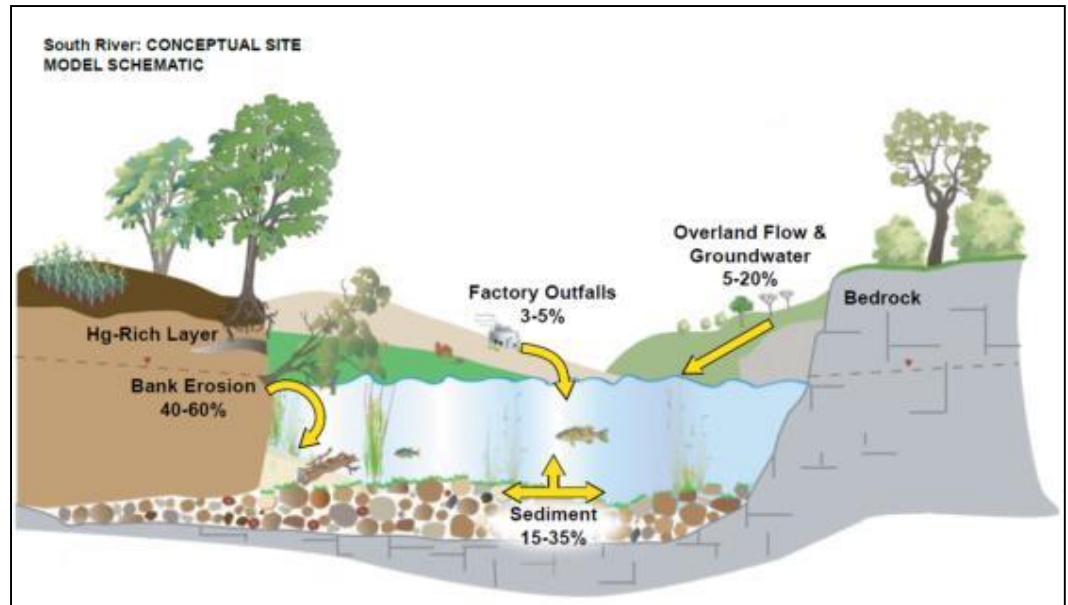
...which are similar to IHg on particles suspended in surface water

- Spring FMeHg concentrations in surface water are declining
- Significant annual variation in YOY Smallmouth bass THg concentrations, particularly in RRM 0-2
 - Constitution Park significantly lower in 2017-2018

Hypotheses

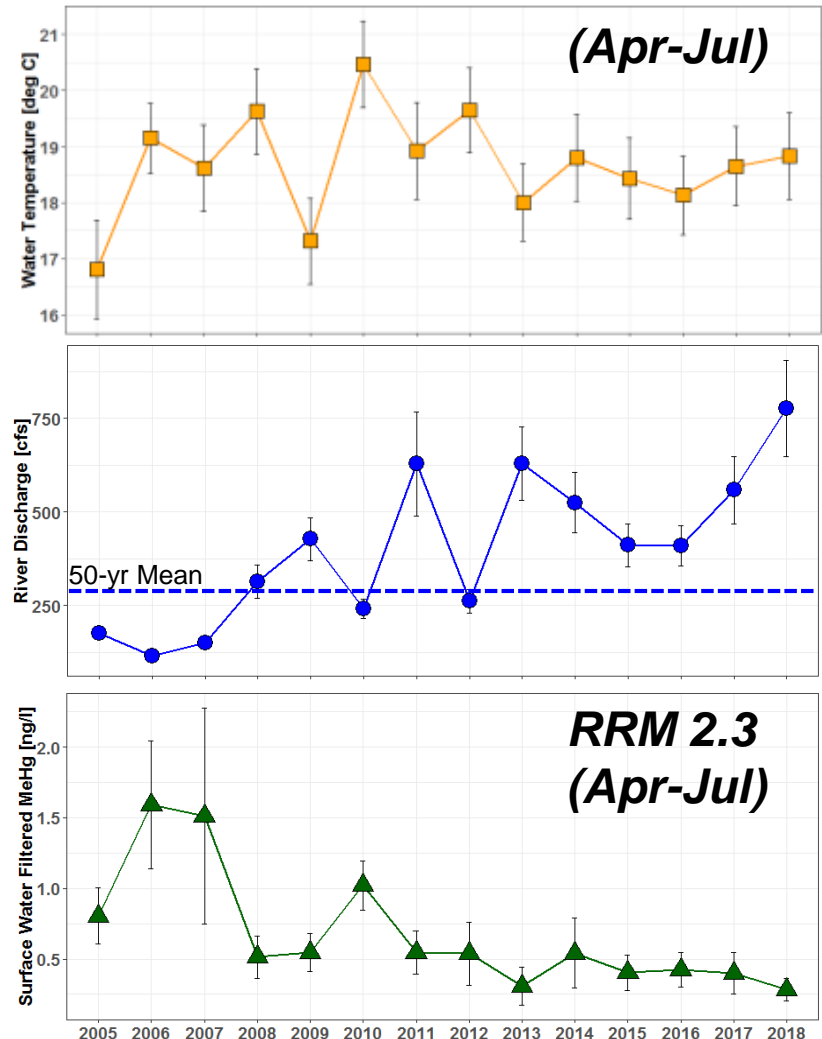
Many potential controls on MeHg

- Climate
- Bank loading
- Plant outfall
- Biological processes

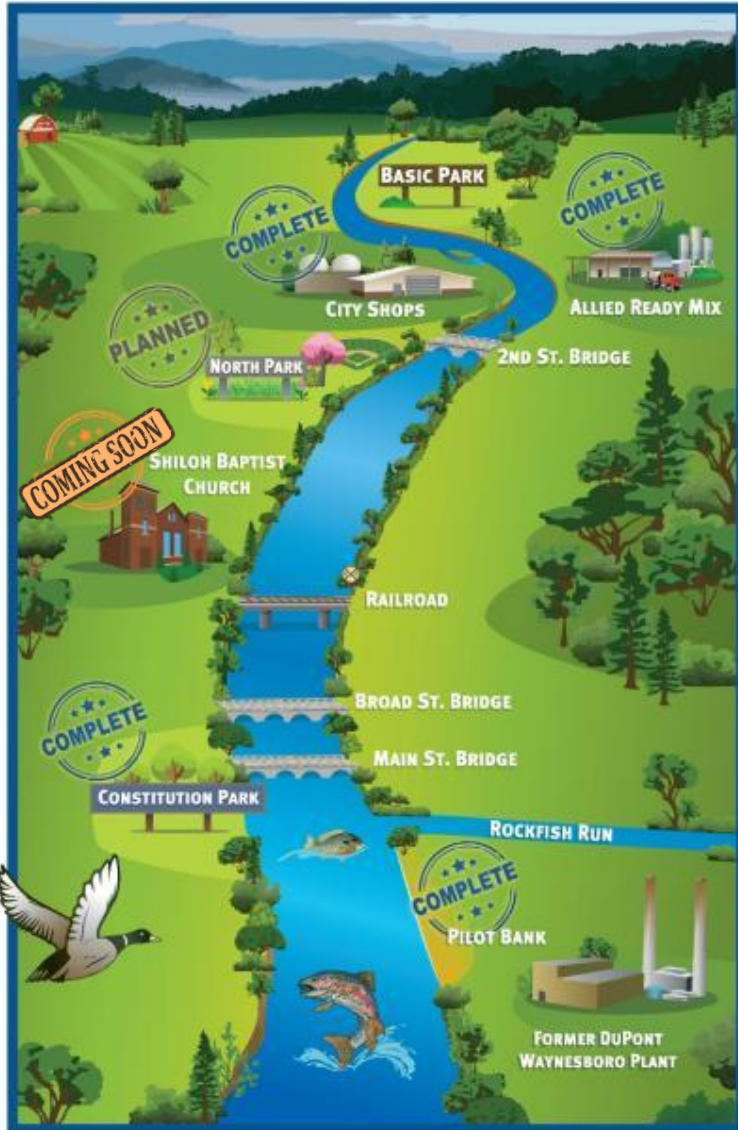


Importance of Climate?

- Generally higher than average spring discharge over last decade
- Declining MeHg concentrations in SW
- Also apparent in lower trophic level media
 - YOY SMB
 - Clams
 - Mayflies
 - Periphyton (more apparent in STM data)



Phase 1 Interim Measures Progress

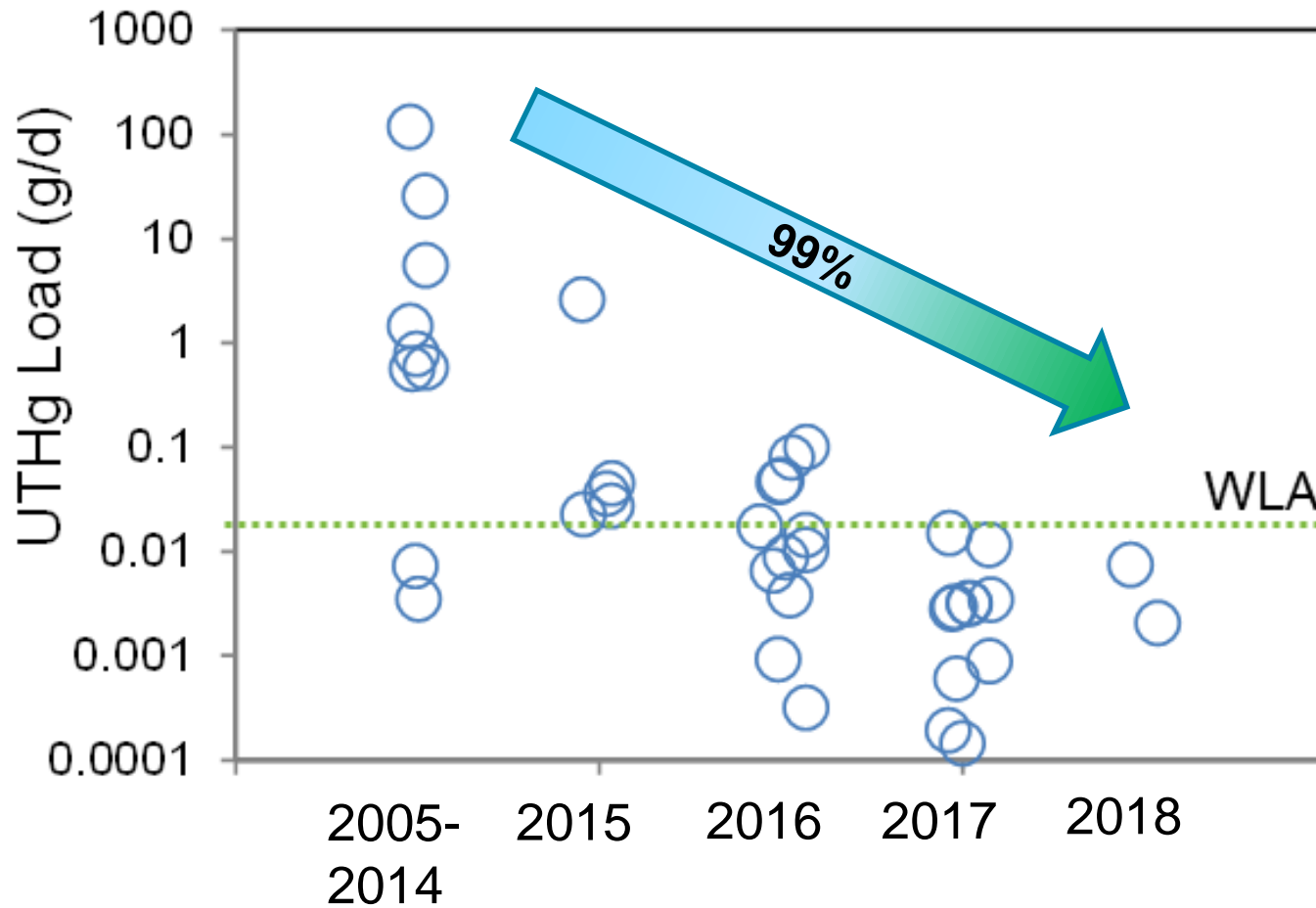


Estimated Percent of Mercury Input Reduced to Date



It is estimated that the erosion of six South River riverbanks contributes appreciable mercury to the river each year. The goal of the remediation work is to stop the erosion of these riverbanks and, in doing so, reduce the mercury input into the South River by 90%.

Outfall 011 THg Loads Declining



Surface Water Modeling Approach

- Developed statistical models to test effects of different variable combinations to predict SW Methylmercury:
 - Water temperature
 - River Discharge
 - Location effect (relative river mile)
 - Bank Remediation
 - Outfall load

Surface Water Modeling Preliminary Results

- Many variables influence surface water MeHg concentrations
- Significant effects identified for discharge and temperature
- Next steps – Integrate Bayesian probability modeling to understand other model parameters

Findings

- MeHg concentrations declining in surface water and YOY in recent years
- STM program documenting reduced concentrations in near-bank abiotic media
- Plant outfall loading below Waste Load Allocation
- Statistical model framework in place to continue evaluating monitoring data



Thank You!
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