PCBs Associated with Suspended Solids in the Green River Watershed

Debra Williston and Deb Lester
Science and Technical Support Section
KC Water and Land Resources Division

King County

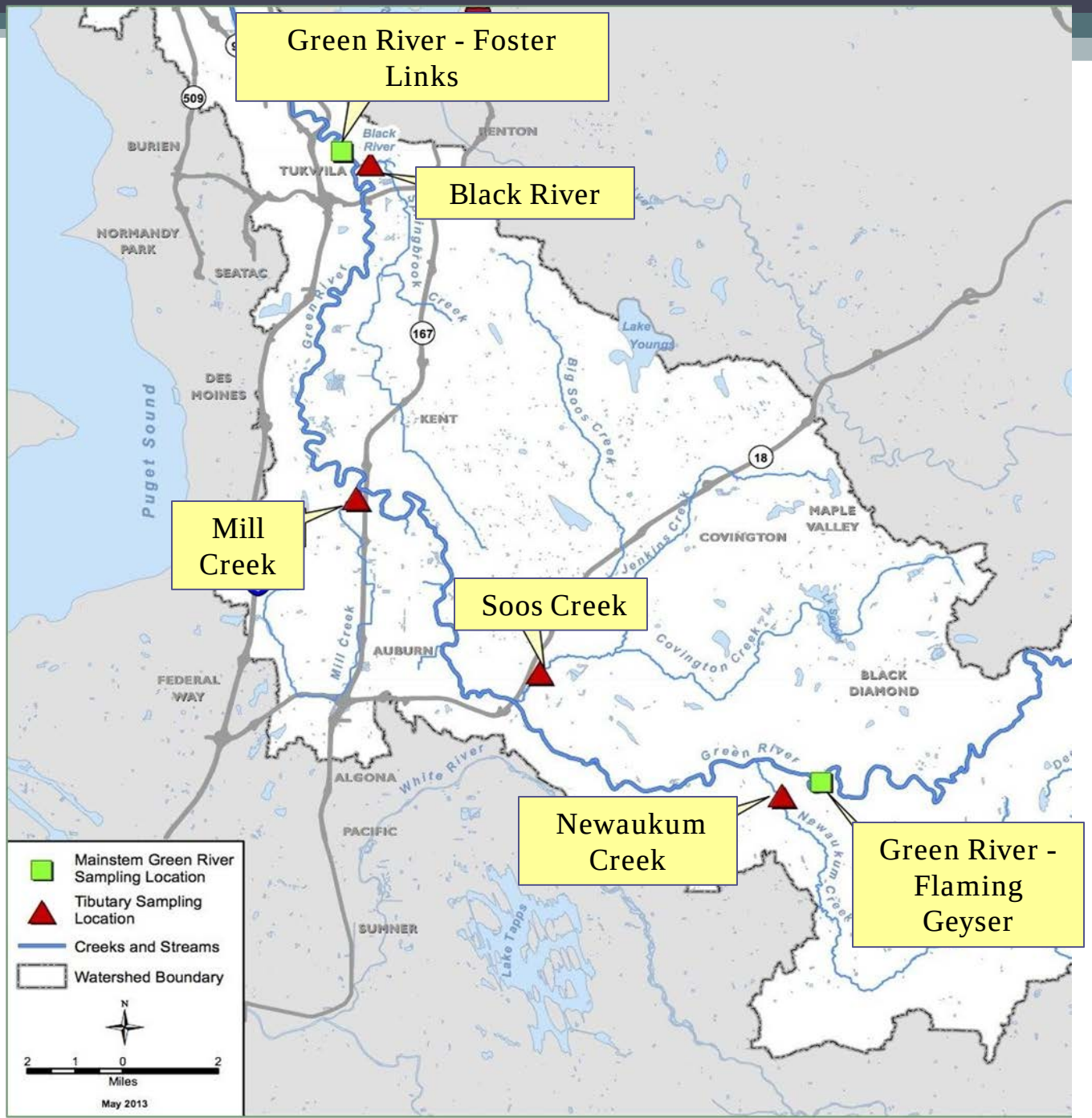
Salish Sea Ecosystem Conference
April 30, 2014

Study Questions

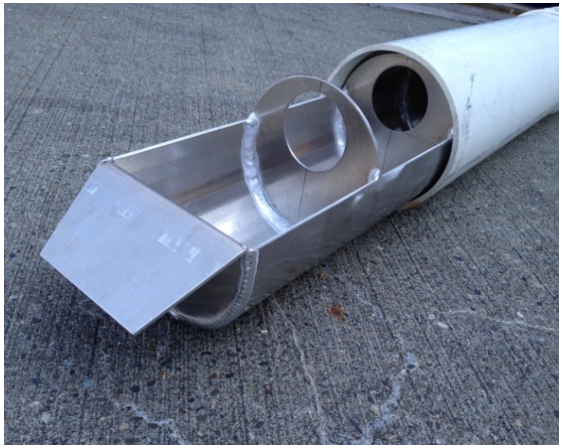
- What are the general chemical characteristics of suspended solids collected over the study period?
- What are initial estimates of the relative contributions of PCBs, PAHs, dioxins/furans and arsenic to the Lower Duwamish Waterway?
  - **Sediment Traps and Filtered Solids**
- How do concentrations of PCBs, PAHs, dioxins/furans and arsenic associated with suspended solids differ between locations during dry season/base flow and wet season/storm conditions?
  - **Filtered Solids**

Study Area

Sampling Locations



Suspended Solids-Sediment Traps



Baffle Trap designed by Jim Devereaux of KC Field Sciences Unit

Four Collection Periods:

- Oct 2012-Feb 2013
- Mar – May 2013
- June – Sept 2013
- Oct 2013 – Jan 2014

Deployed Sediment Traps

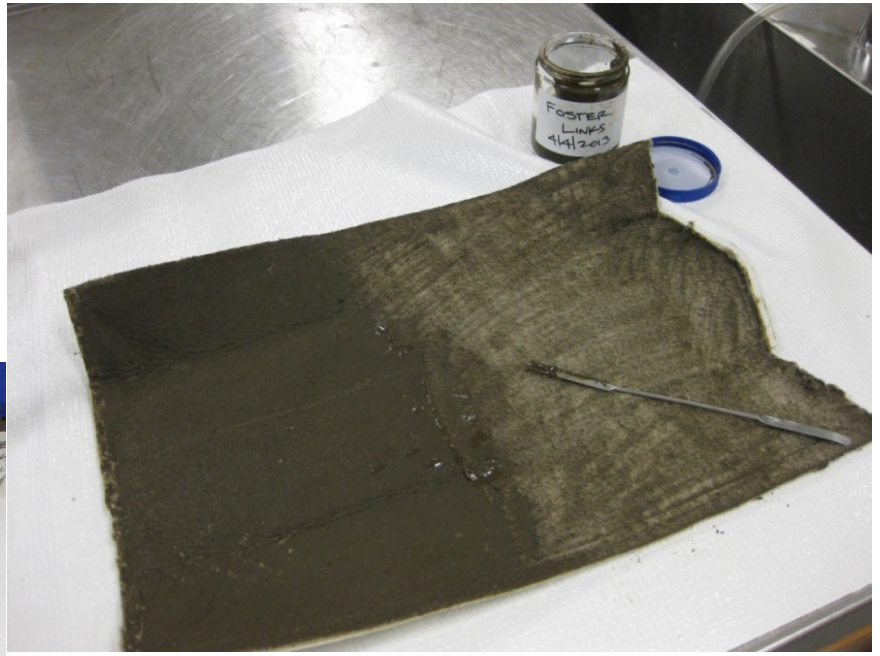
Suspended Solids- Filtered Solids

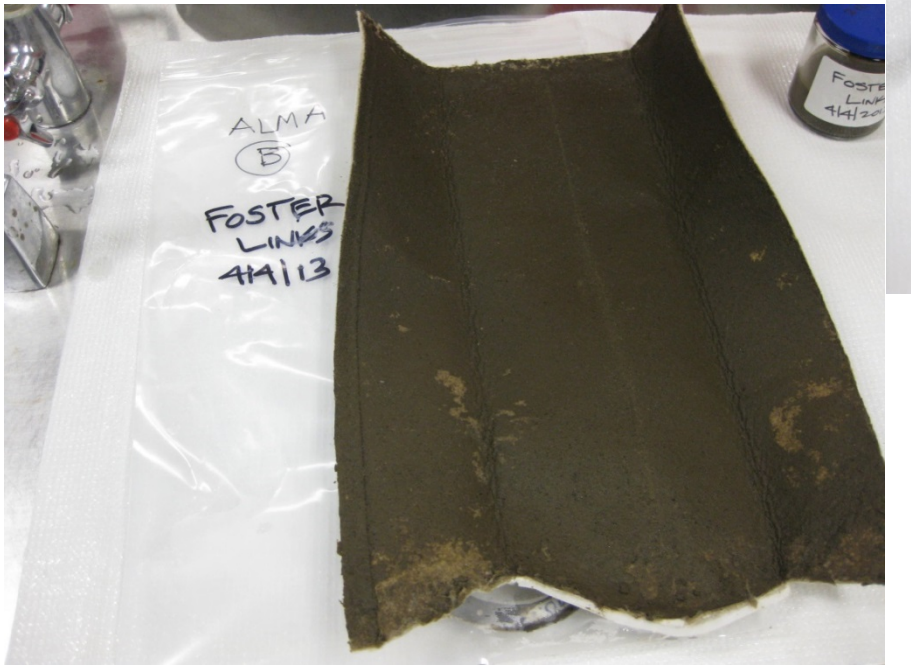
- Stream water pumped through filter housing
- Solids captured on 5 µ polypropylene felt filter, pressure rated to 15 psi

Suspended Solids- Filtered Solids

Targeted Sample Collection for each location

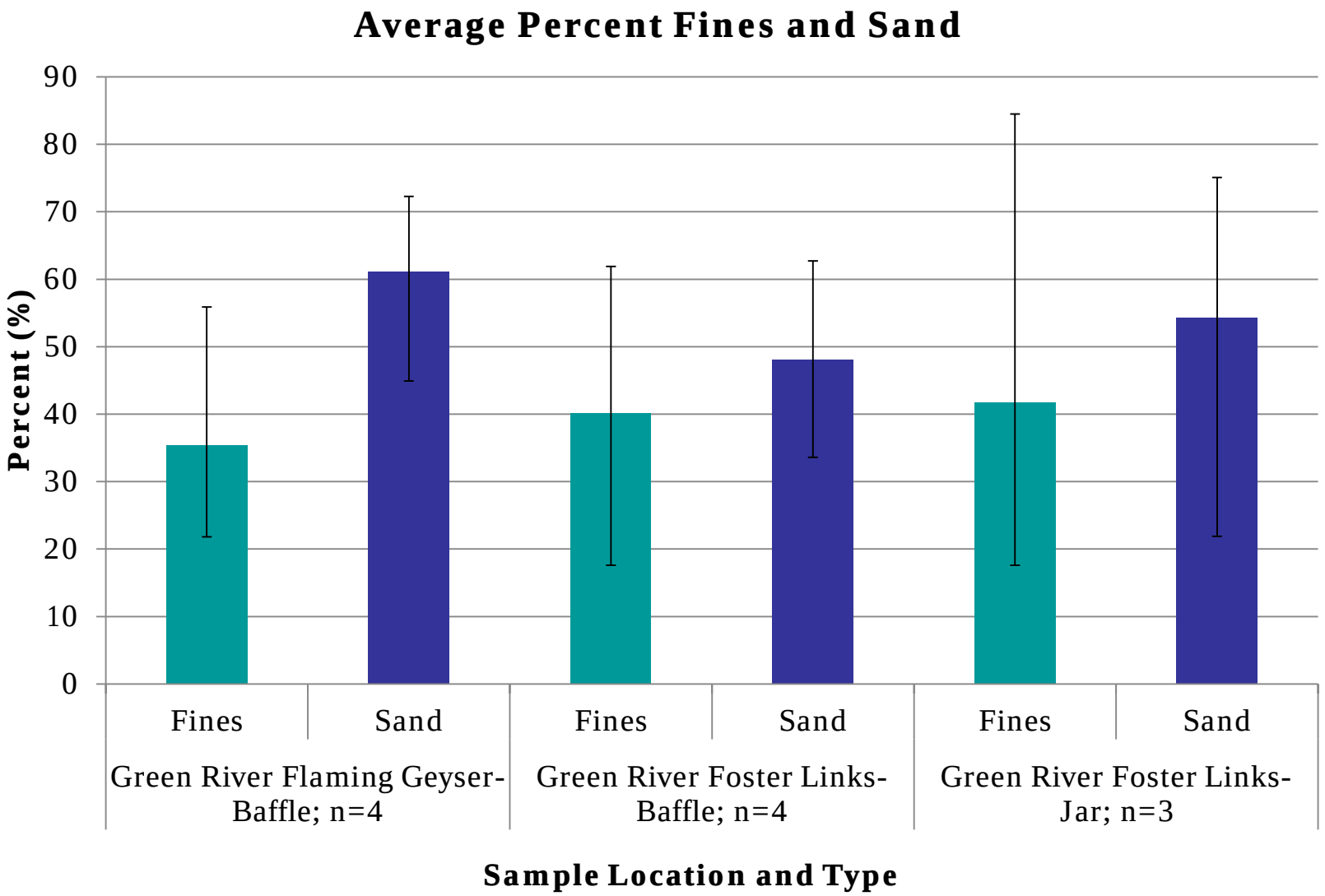
- One dry baseflow
- Five storm events/wet season



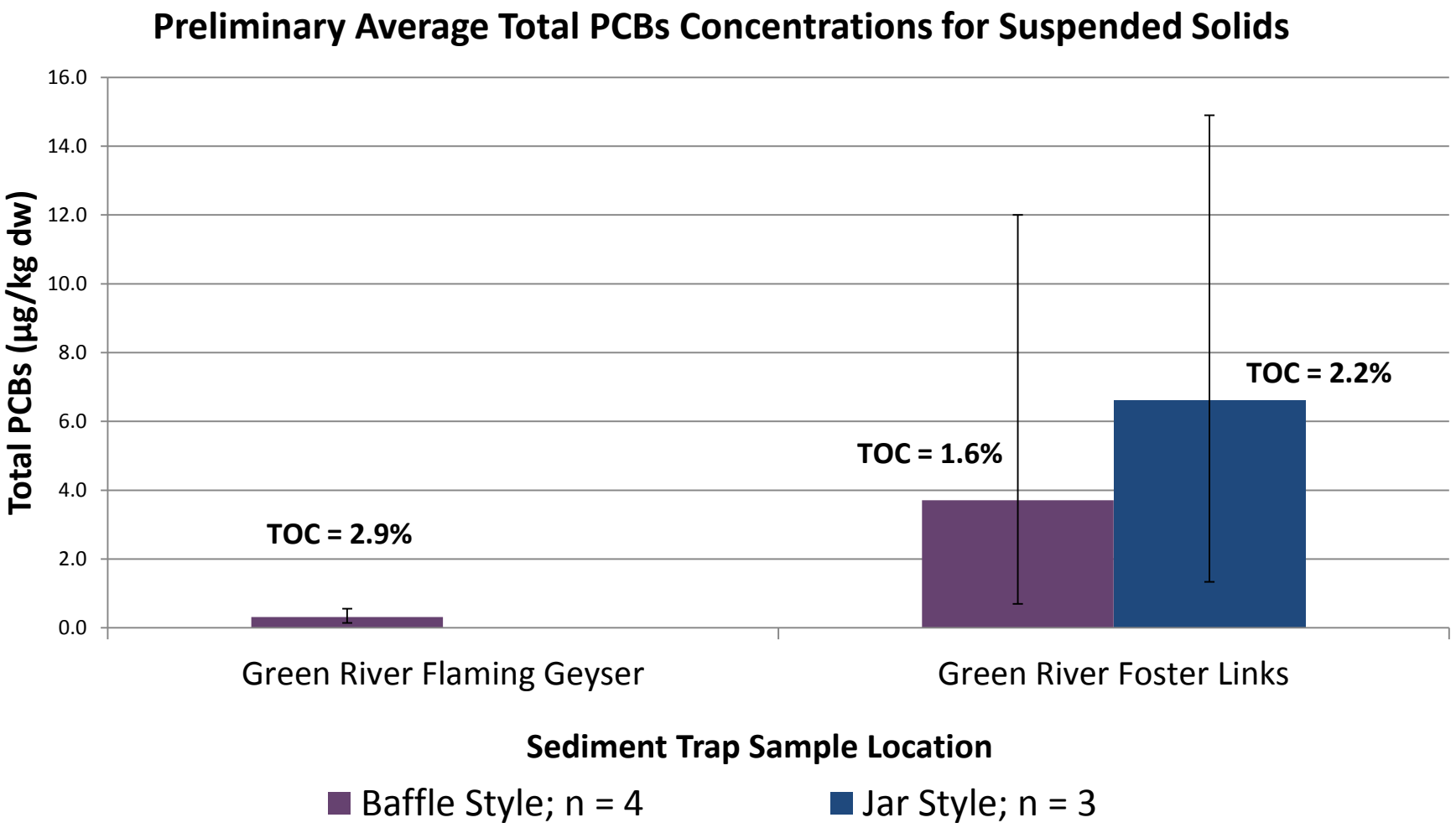


Processing Filters

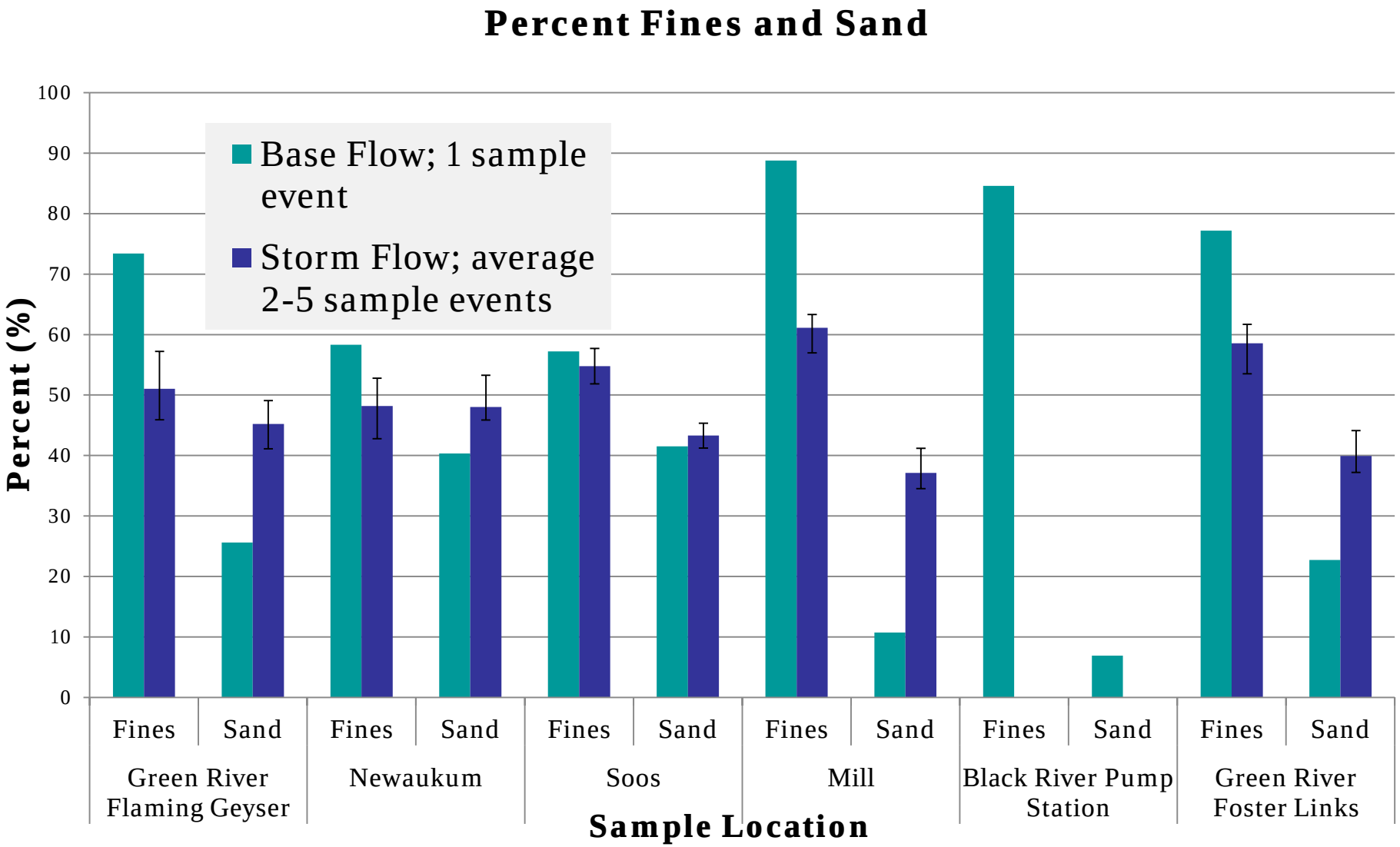
Preliminary Results- Sediment Traps



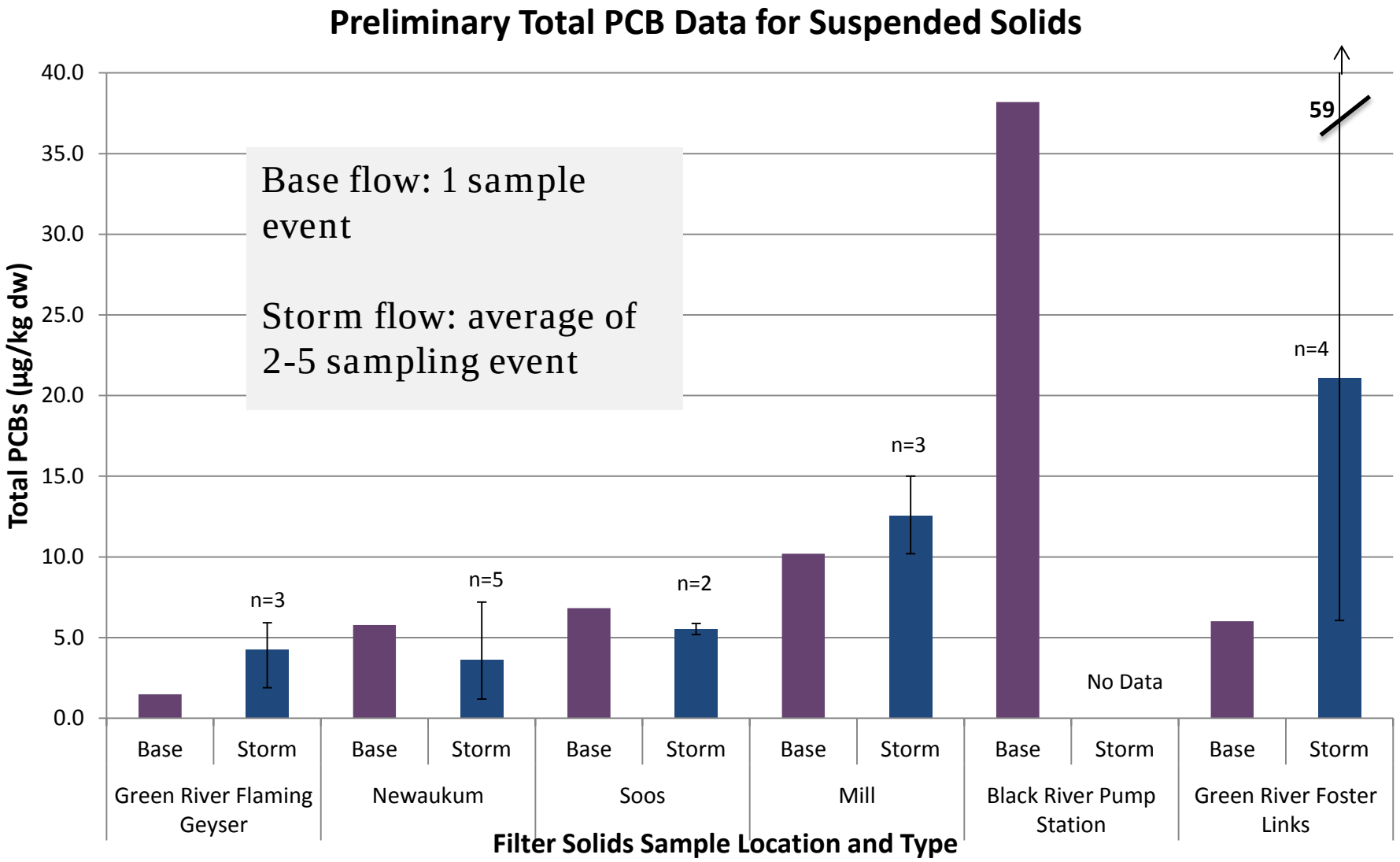
Preliminary Results- Sediment Traps



Preliminary Results- Filtered Solids



Preliminary Results- Filtered Solids



Summary

- Preliminary Results
  - Suspended solids captured by filtered solids method tend to have higher percent fines then sediment trap method
  - Sediment traps similar percentages of sand and fines; bedload as well as suspended solids captured by trap
  - Total PCBs generally higher in samples with higher percent fines
  - Total PCBs most variable in Green River Foster Link samples
- Data interpretation incomplete; more samples currently being analyzed

Acknowledgements

- Funding by KC Wastewater Treatment Division (WTD)
- Design consultation by Jeff Stern of KC WTD
- *KC Field Sciences Unit*: Jean Power, Jim Devereaux, Stephanie Hess, Ben Budka, Bob Kruger & others
- *KC Environment Lab*: Fritz Grothkopp, Diane McElhany, Brian Prosch, Casey Maggart, Anthony Ocana, Lily Kdep Benjamin Mendoza and Sasha Stensen
- AXYS Analytical Services
- *Leidos (formally SAIC)*: Cory Wilson
- *Foster Links Golf Course*: Curt Chandler and staff
- *Ecology*: Dan Cargill