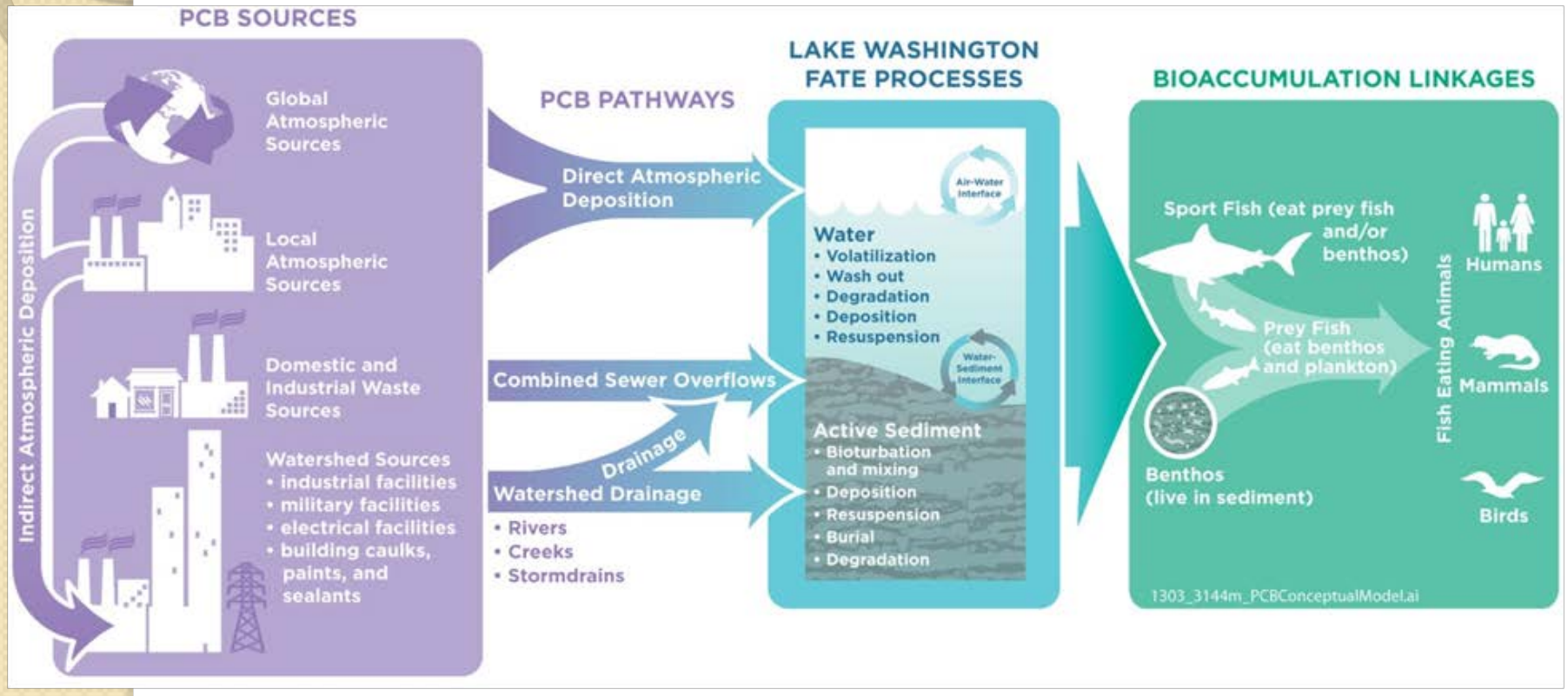
Lake Washington PCB/PBDE Study Estimates of loading from major pathways

Curtis DeGasperi, Jenée Colton, and Richard Jack
Science Section
King County Water and Land Resources Division, Department of Natural Resources and Parks

2014 Salish Sea Ecosystem Conference
May 1, 2014

King County

Conceptual Model for PCBs



Major Pathways

- Rivers (Cedar and Sammamish)
- Local Drainages
  - Monitored tributaries
    - Thornton Creek
    - Juanita Creek
    - May Creek
  - Remaining unmonitored lake drainage
- CSOs
- Floating bridges (stormwater runoff)
- Direct atmospheric deposition

Loadings Estimates

Concentration X Flow = Loading

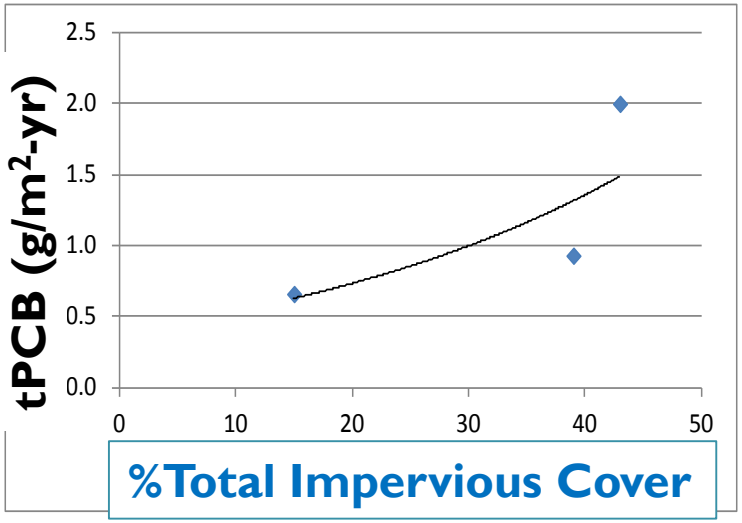
Field study mean concentration used, except

- Extrapolation approach for unmonitored tributaries
- Enhanced CSO data with historical data

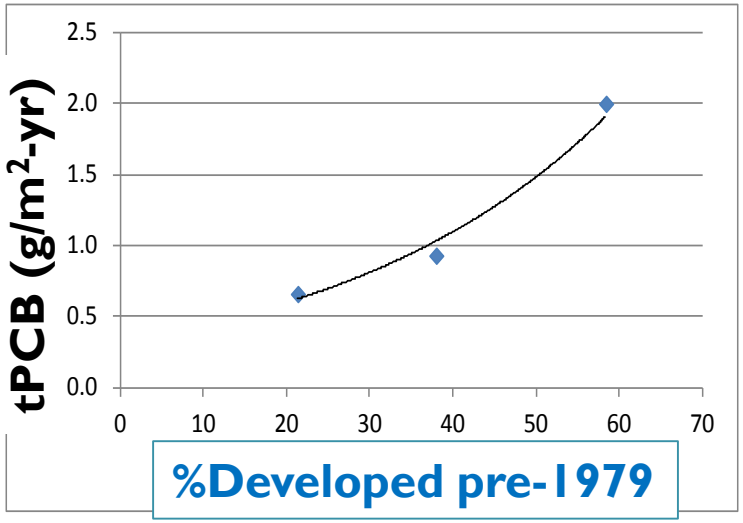
Flow

- Gauged flow data OR
- Estimated

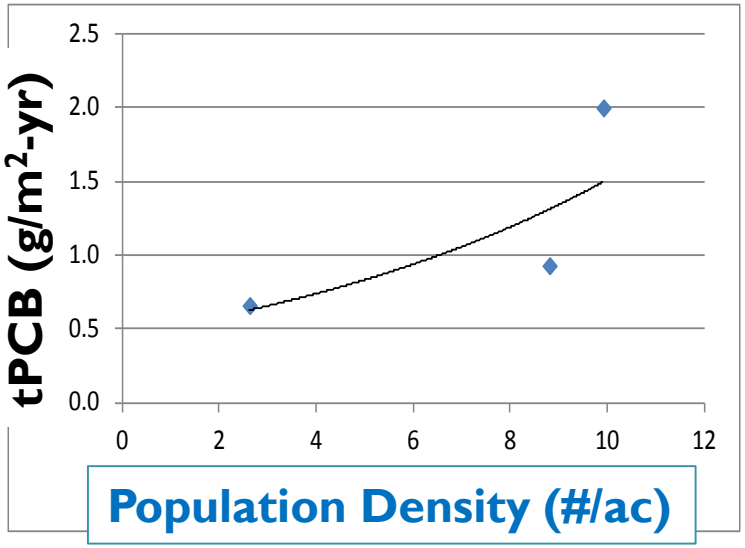
Correlations with Land Use/Population



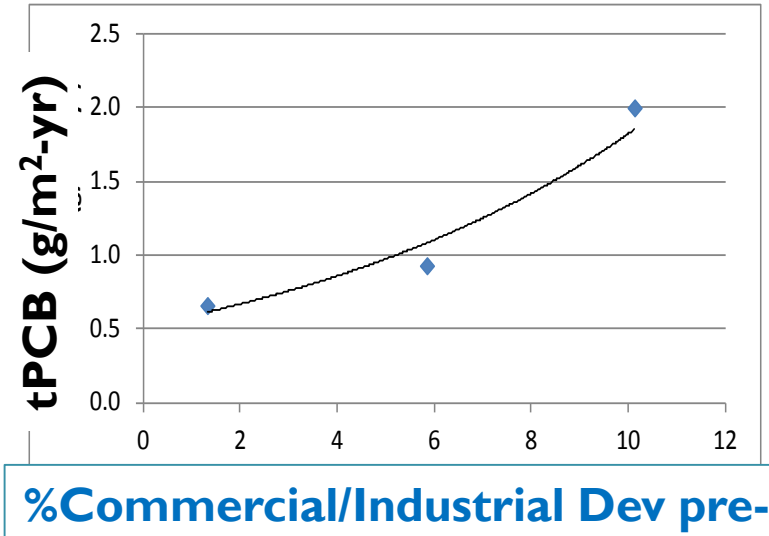
%Total Impervious Cover



%Developed pre-1979

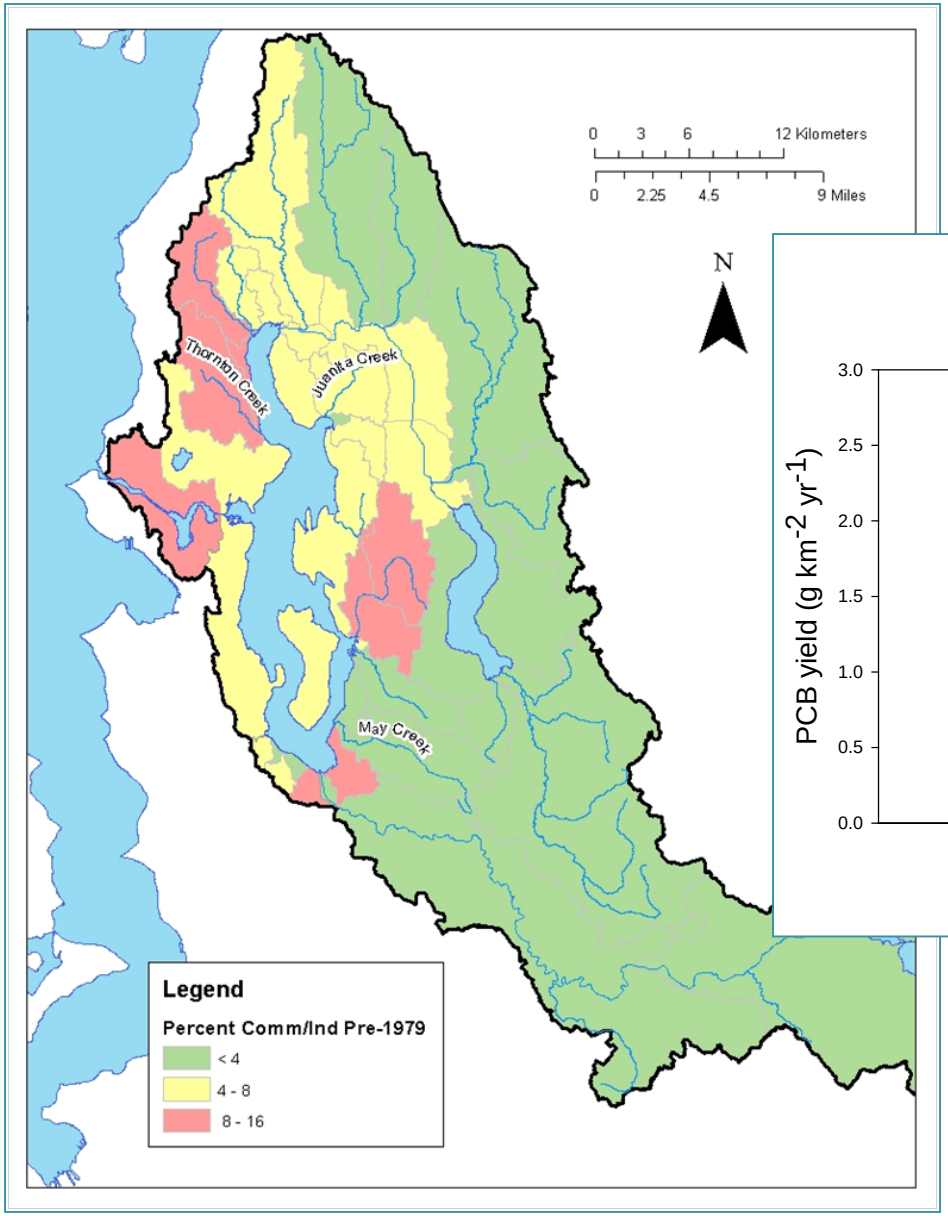


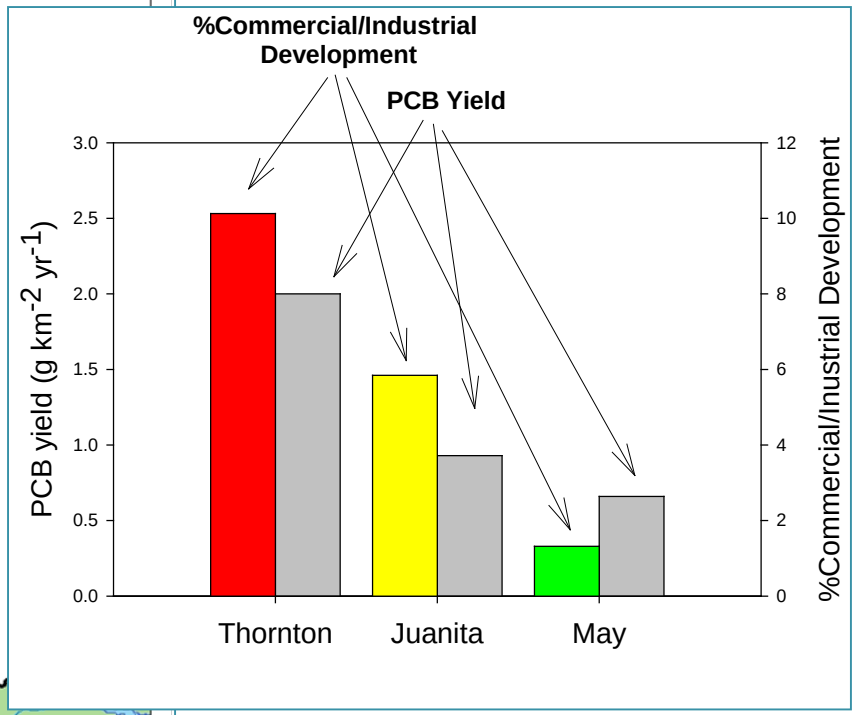
Population Density (#/ac)



%Commercial/Industrial Dev pre-1979

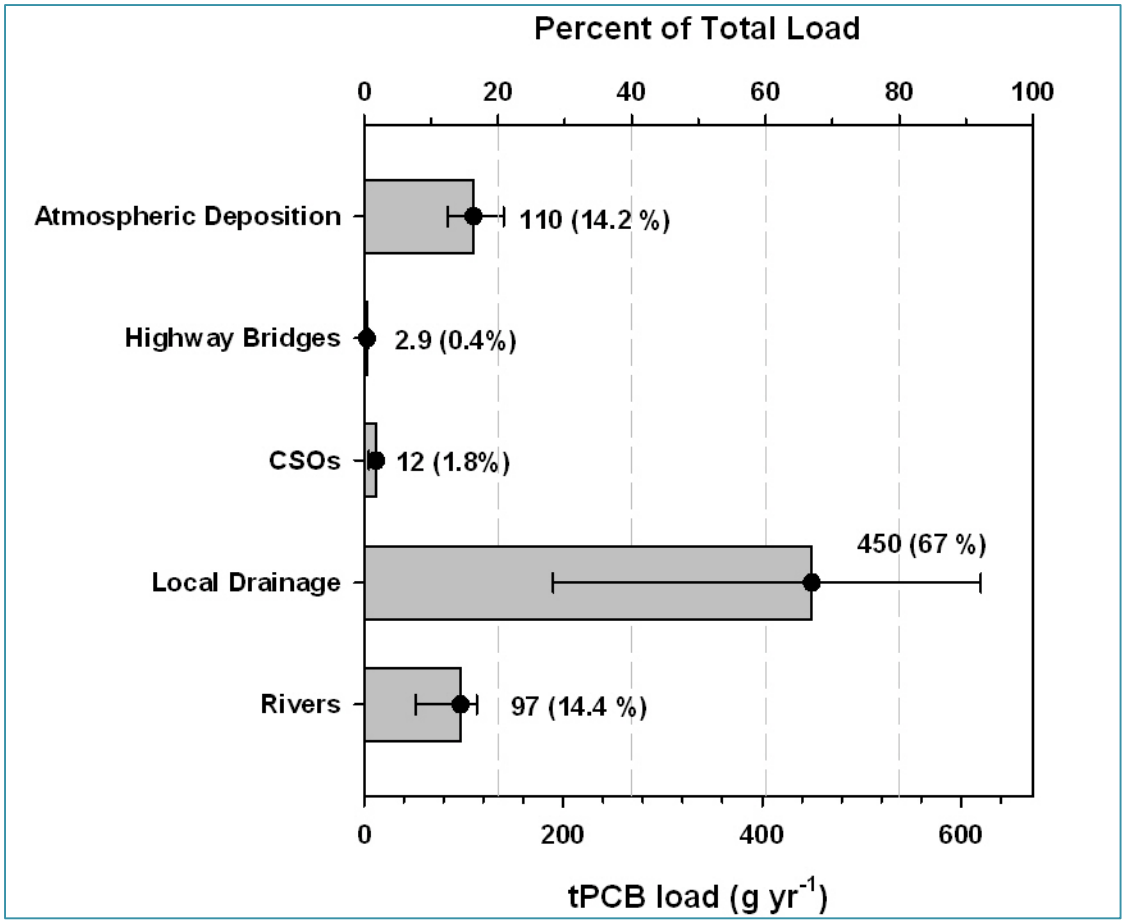
Relationship with Historical LandUse?



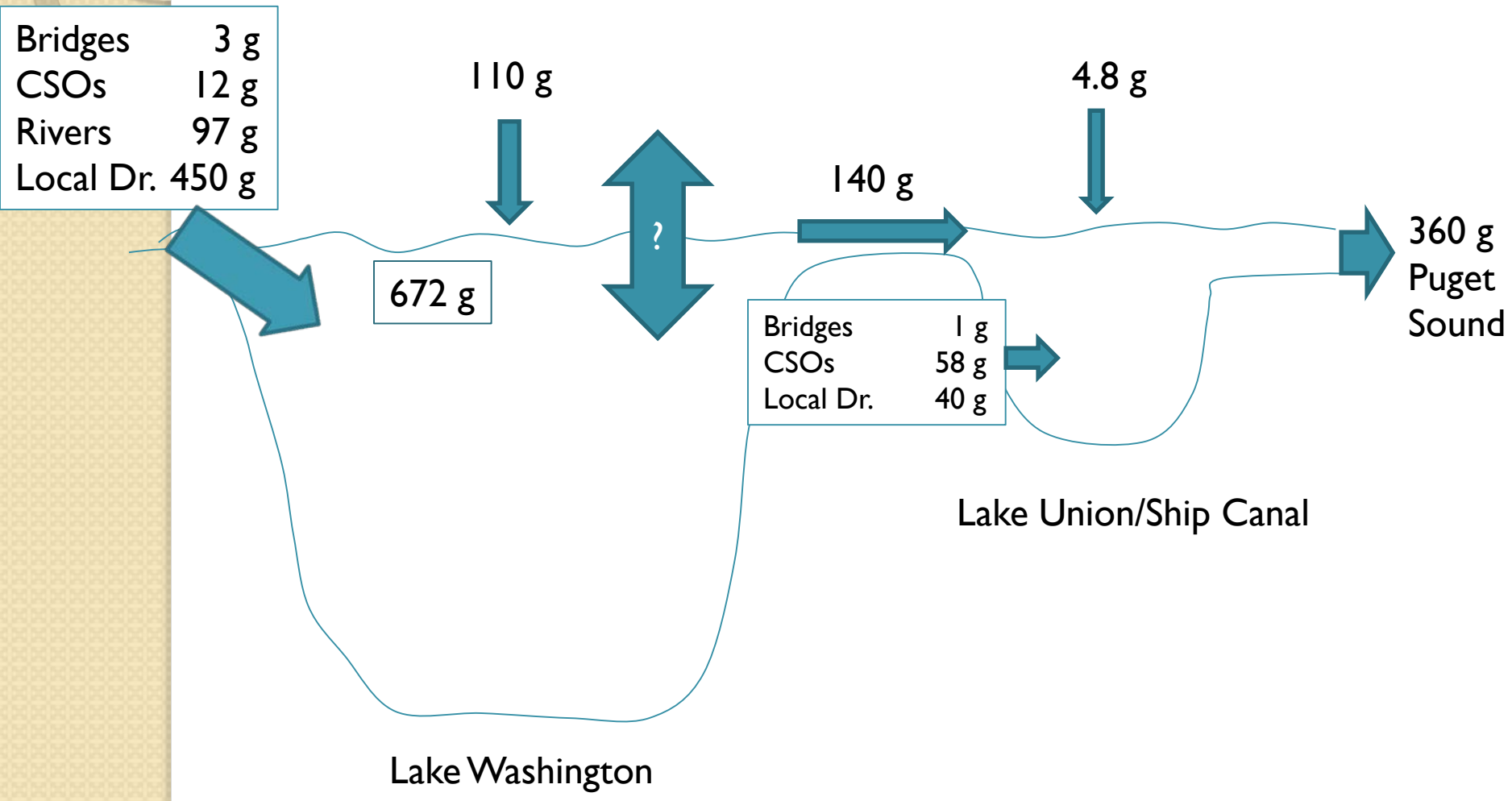


Current PCB Loading Estimates

672 g yr^{-1} to Lake Washington
140 g yr^{-1} exits Lake Washington
360 g yr^{-1} to Puget Sound

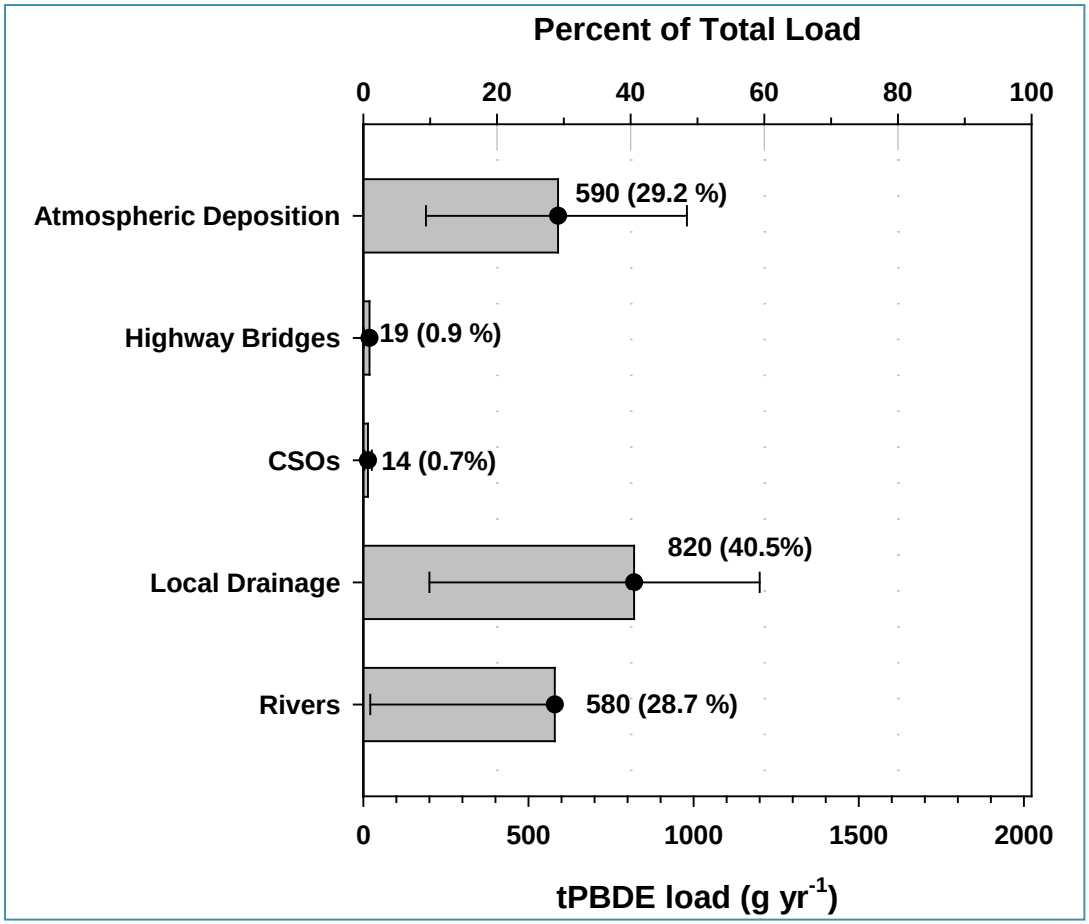


PCB Loading Summary



Current PBDE Loading Estimates

2,023 g yr^{-1} to Lake Washington
968 g yr^{-1} exits Lake Washington
990 g yr^{-1} to Puget Sound



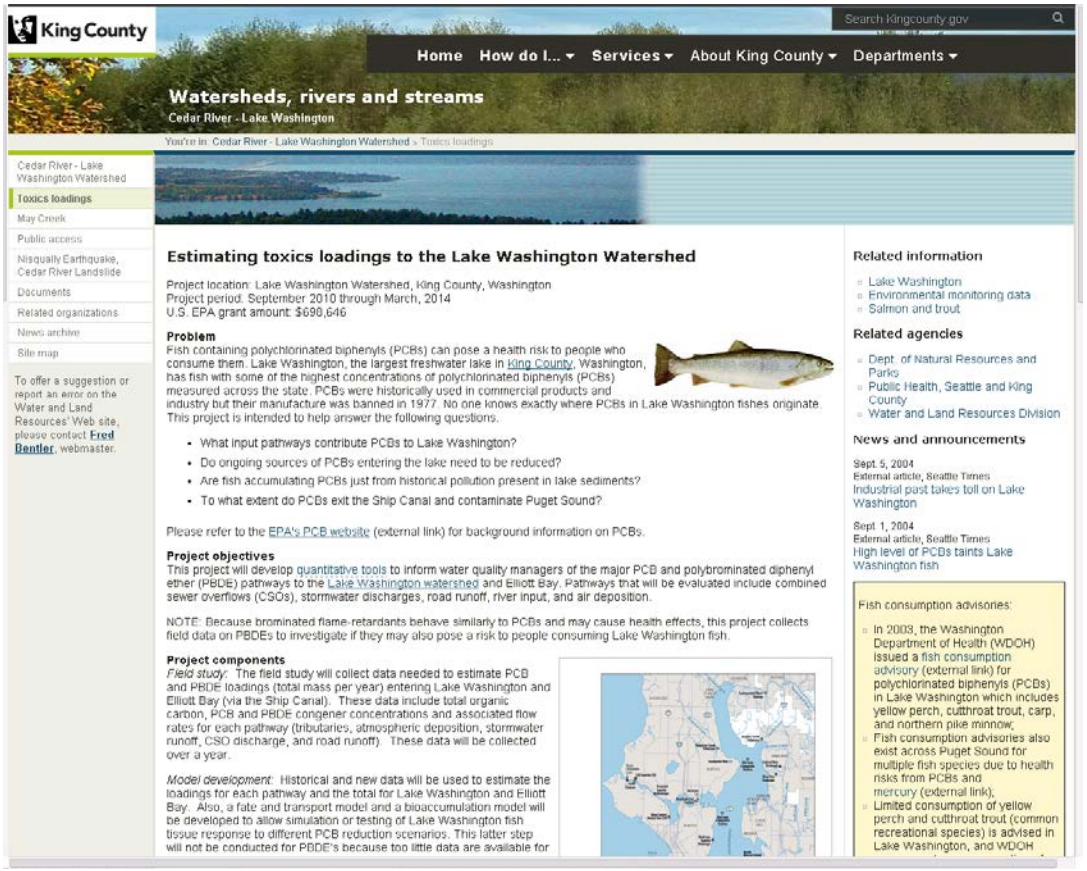
Load from Local Drainage Driven by Stormwater

- Stormwater is <30% of annual flow in streams BUT
- Accounts for 80-90% of annual PCB load from local drainage

Loadings Conclusions

- Appears to be relationship between local tributary PCB areal loading and age and/or type of development
- As much as 70% of lake PCB load comes from local tributaries
- As much as 80% of local tributary PCB load delivered in stormwater
- Lake Washington is a sink for PCB and PBDE

QUESTIONS?



Search: lake washington pcb study

http://www.kingcounty.gov/environment/watersheds/cedar-river-lake-wa/pcb-pbde-loadings.aspx