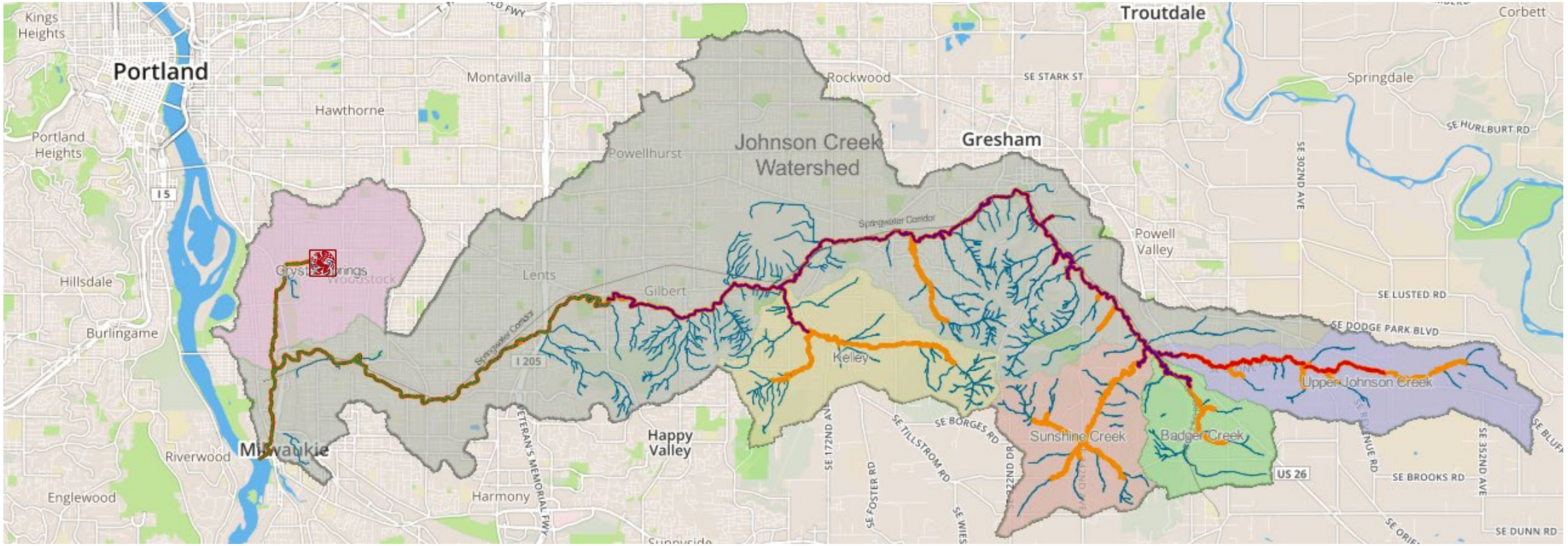
Measuring emerging contaminants in Johnson Creek with Reed College undergraduate students



REED COLLEGE

Danielle Cass & Lynne Gratz
Reed College Chemistry Department &
Environmental Studies Program

Reed College: Part of the Johnson Creek watershed landscape



Why we're here

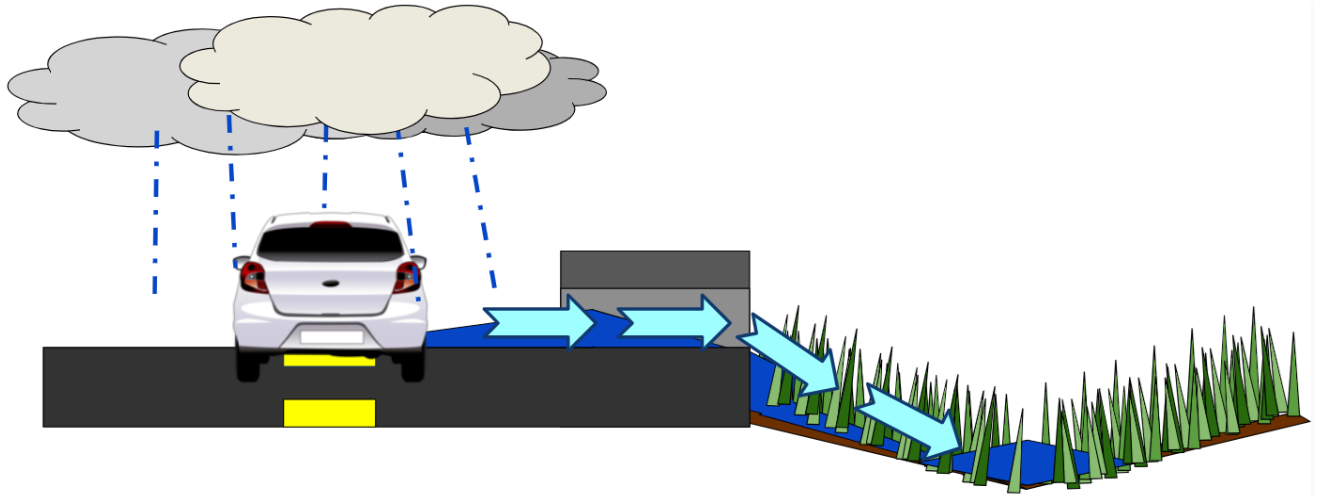
Goal: Inform the local community about Reed student–faculty projects in and around Johnson Creek, foster new partnerships

Overview:

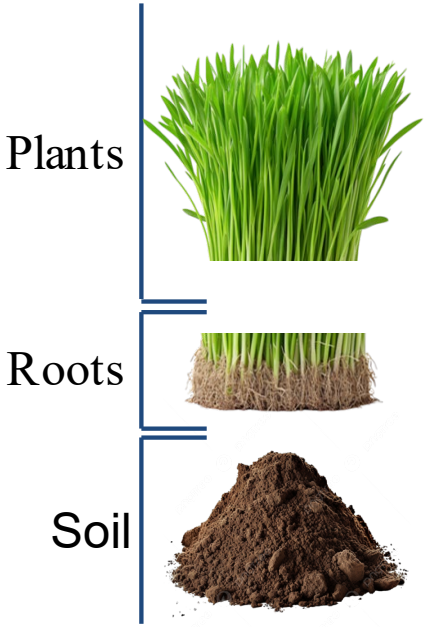
1. Reed College in the JCW - a natural laboratory!
2. On-campus projects: bioswale, parking lot runoff
3. Off-campus projects: Precision Castparts, I-205 runoff, legacy contaminants

Bioswales- Where are the metals going?

Ali Pardini ‘24, Jonah Rohlfing ‘23, Sofia DeAngelis ‘26



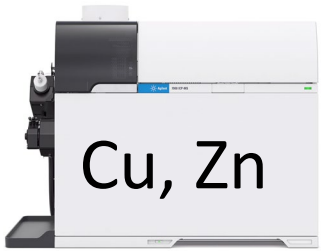








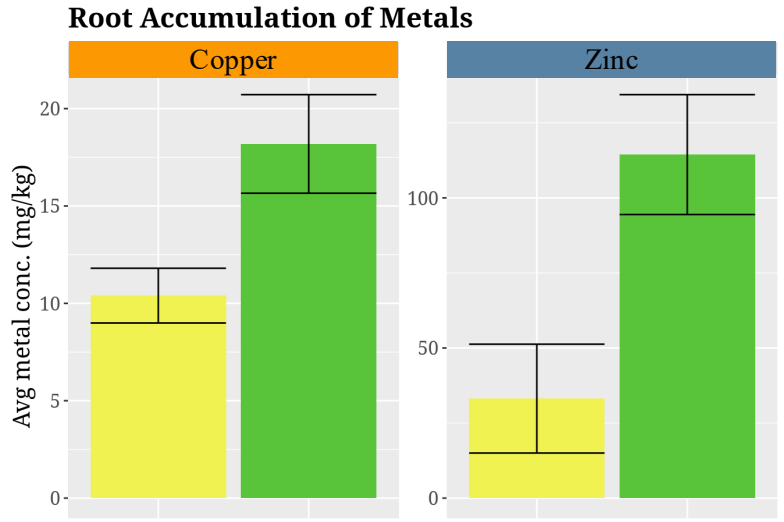




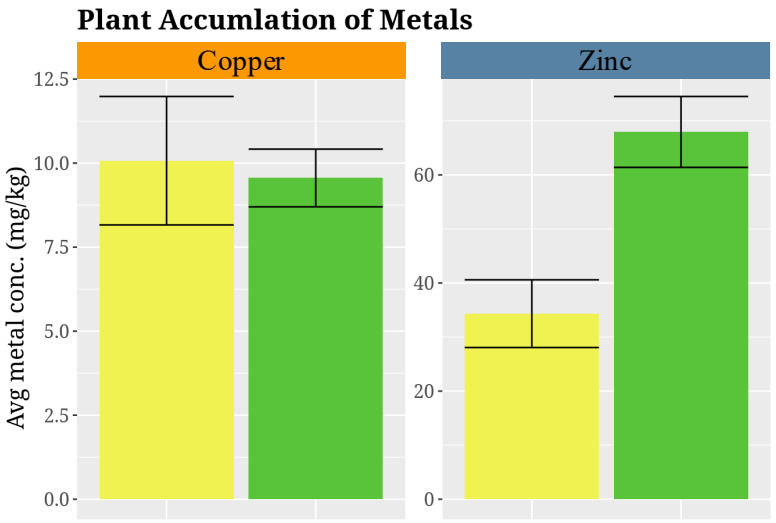
Bioswale contains more copper & zinc than a control site



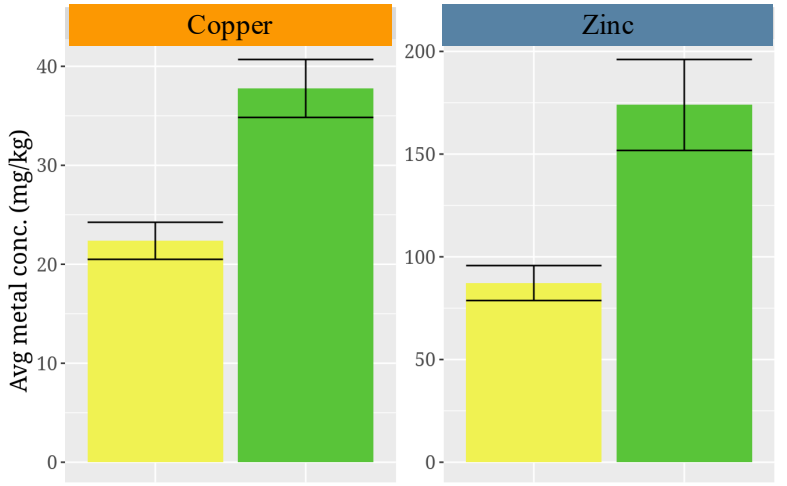












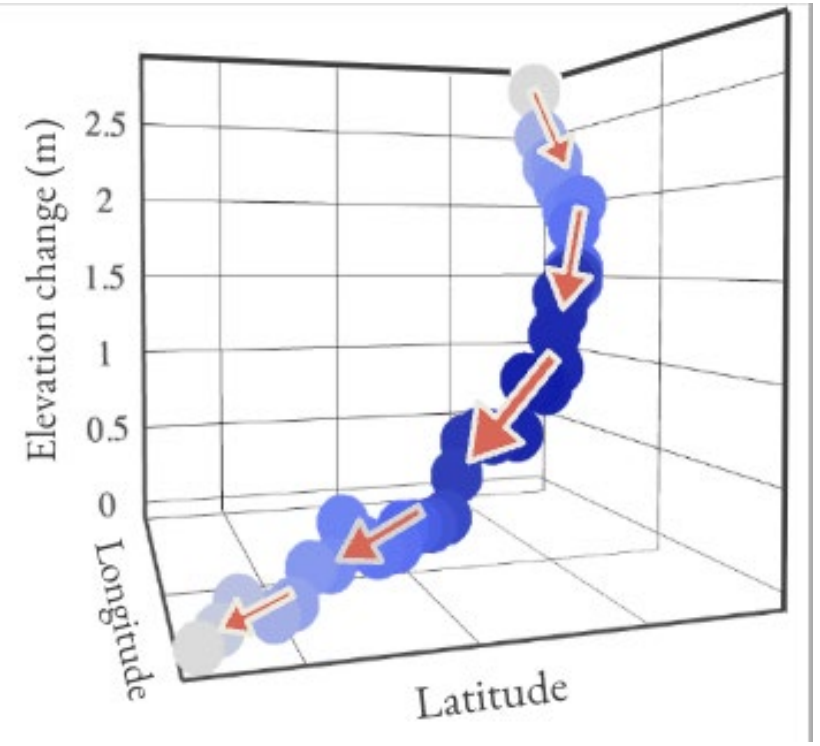
Metal Distribution follows road curvature within the bioswale

Roots

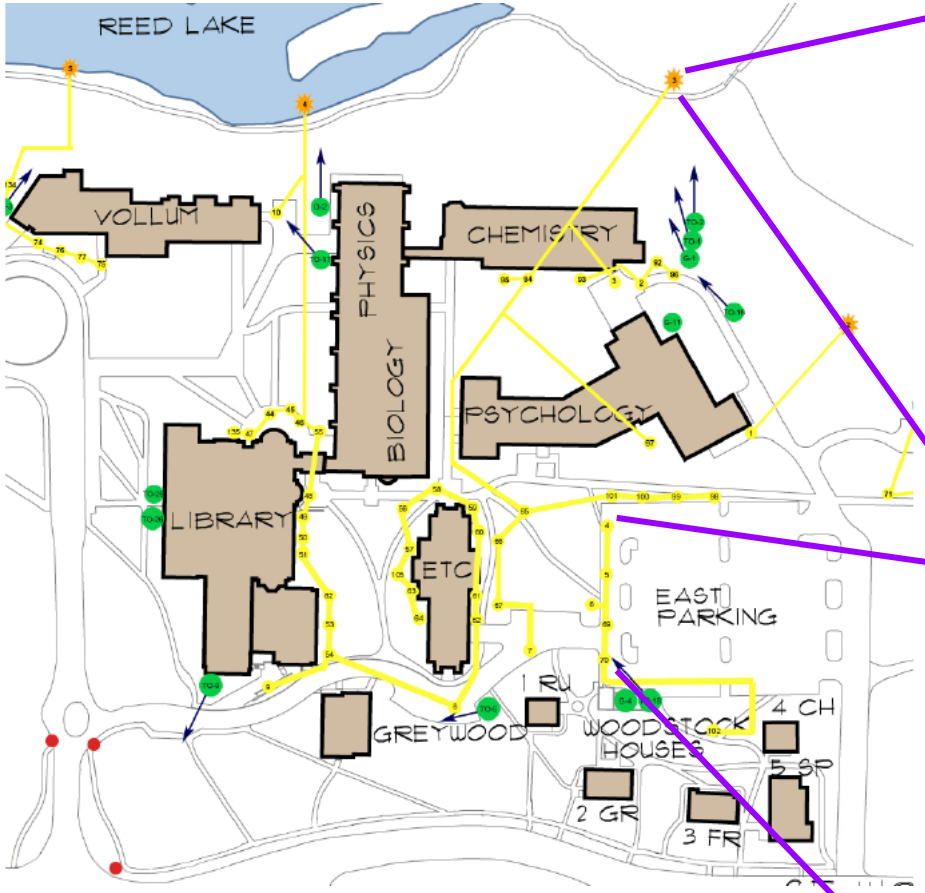








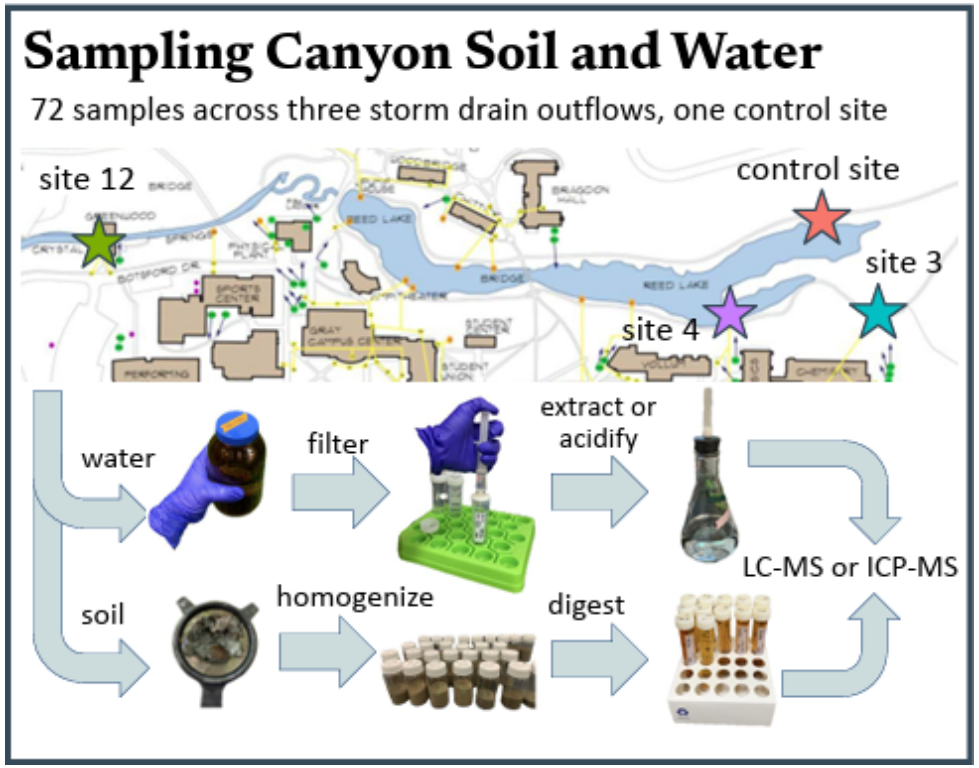
How effective is Reed's stormwater infrastructure at removing 6ppd-q from parking lot runoff?







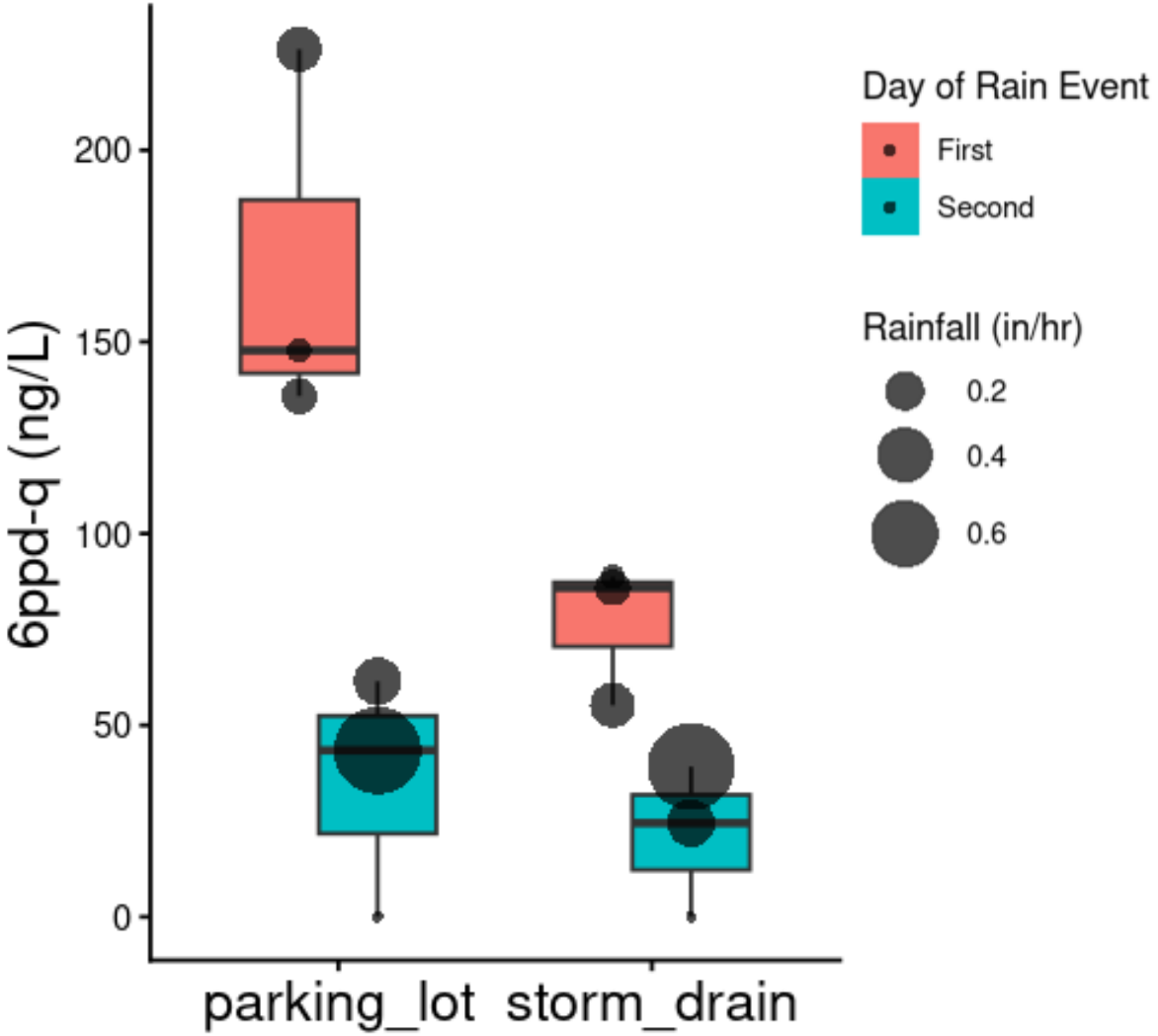
Cayden Bauer ‘26



Ezra Krantz ‘27

Laboratory development & validation:
Lindsey Babcock ‘26, Stell Koch ‘27

6PPD-q concentrations were significantly higher in prefiltration samples and significantly higher in the first day of rain events



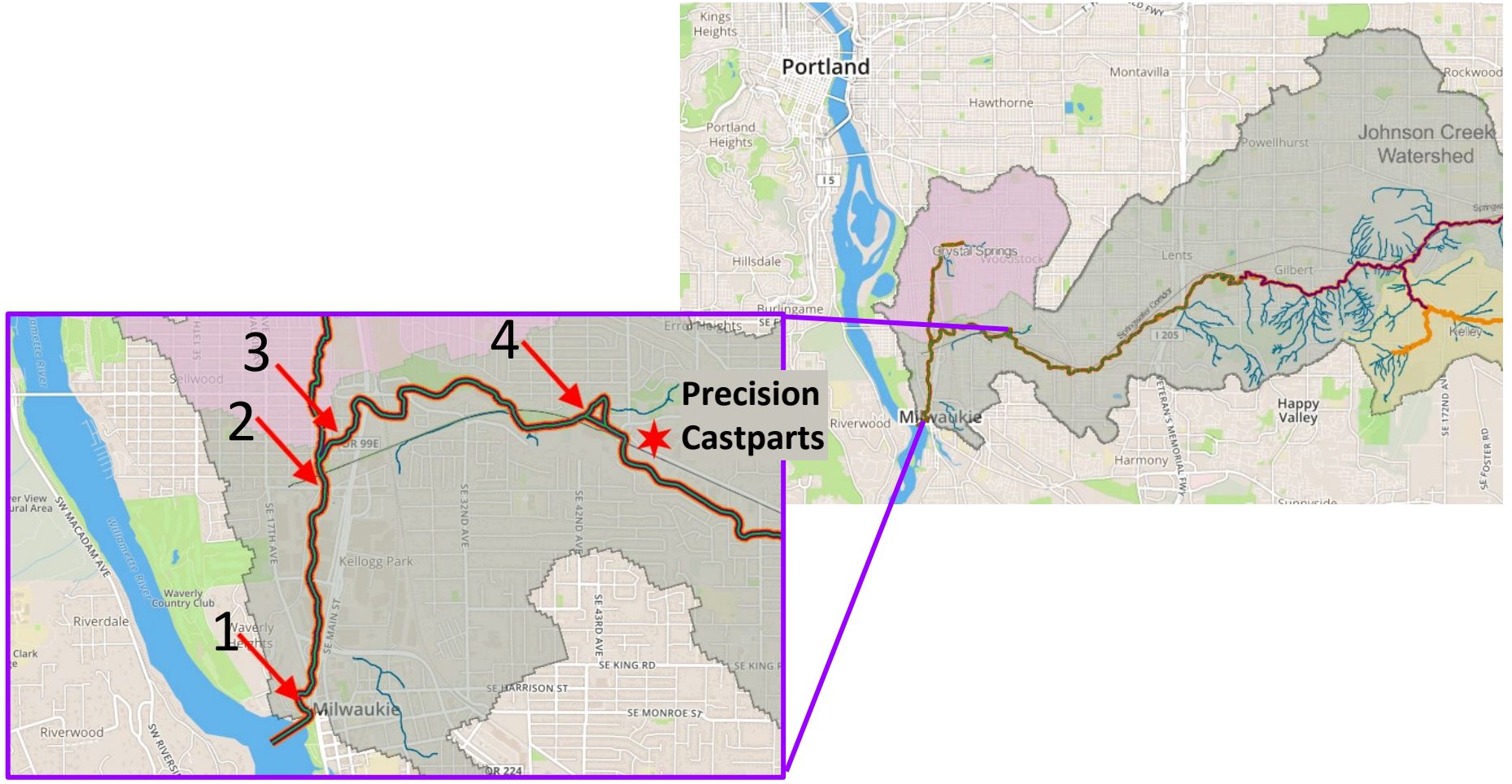
Further Questions:

- Where is the majority of 6ppd-q entering the canyon?
- Are the lower storm drain levels due to sequestration or dilution of 6ppd-q?
- Will stormwater filter socks around the drains capture 6ppd-q?

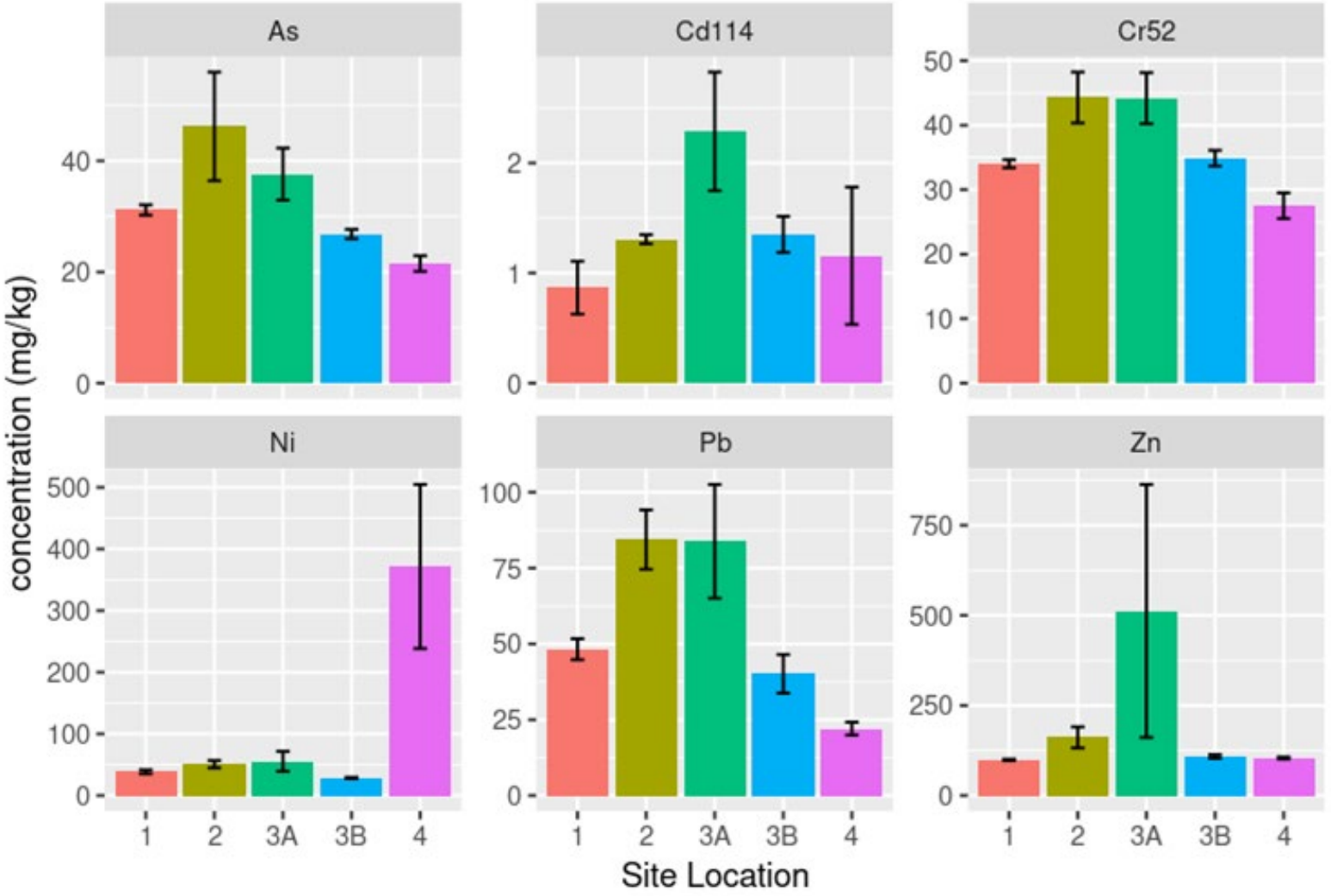
Digging up the Dirt on Johnson Creek: An analysis of metal contamination in sediment cores

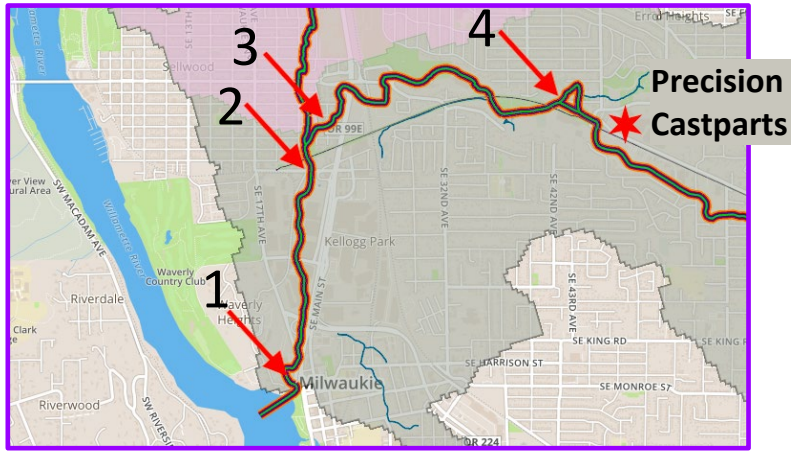
Tiffany Thion ‘19





Metal Distribution along the west end of Johnson Creek





- Site 4 has high levels of Ni. This has also been reported by OHA
- Zn is site 3A is due to one outlier, possibly metal debris
- Pb is never good, but EPA residential RSL = 100 mg/kg

CHEM311 *Analytical Chemistry* courses, 2023-present: Soil sampling in Johnson Creek



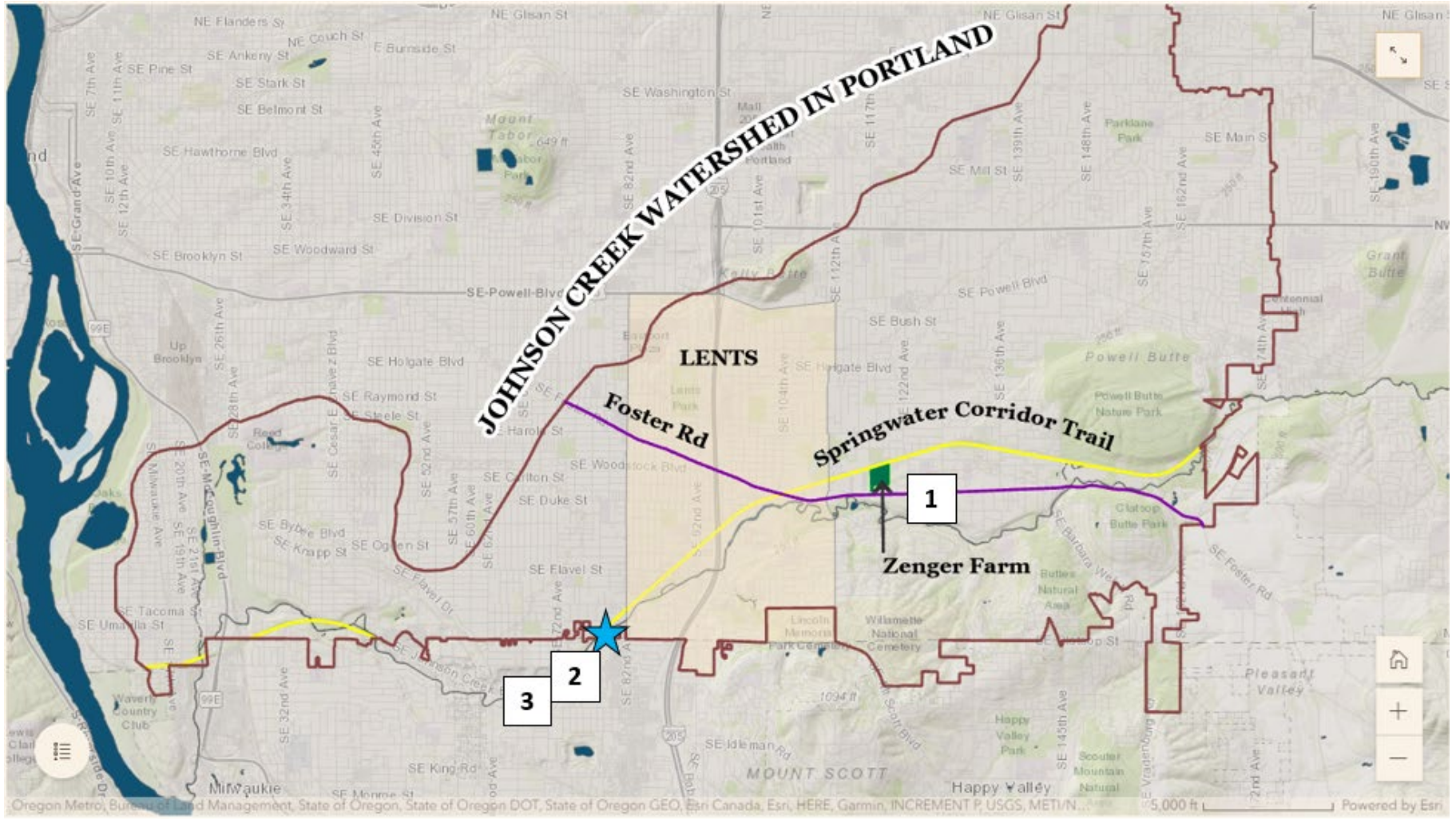








Our sampling sites



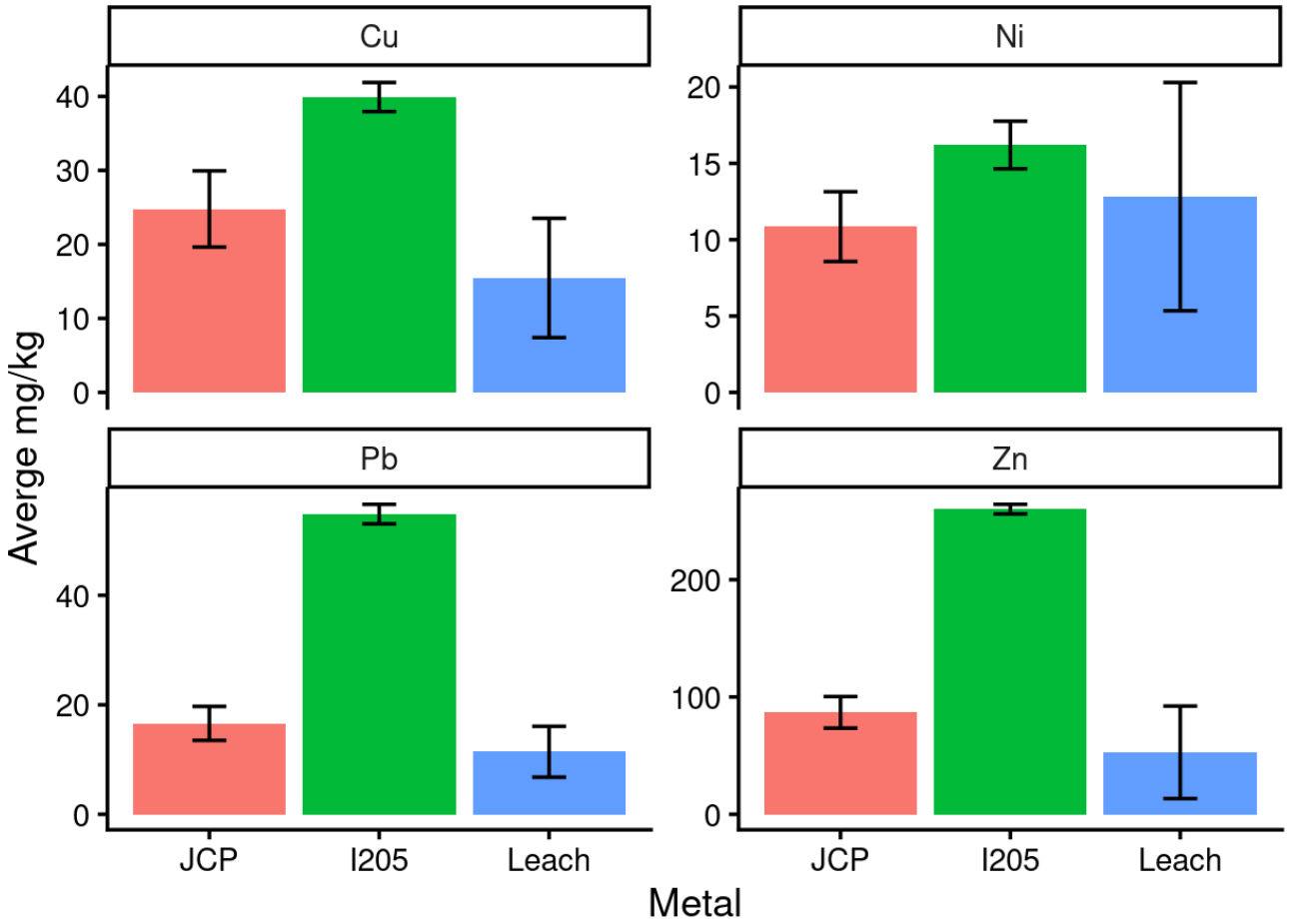
1: Leach Botanical Gardens

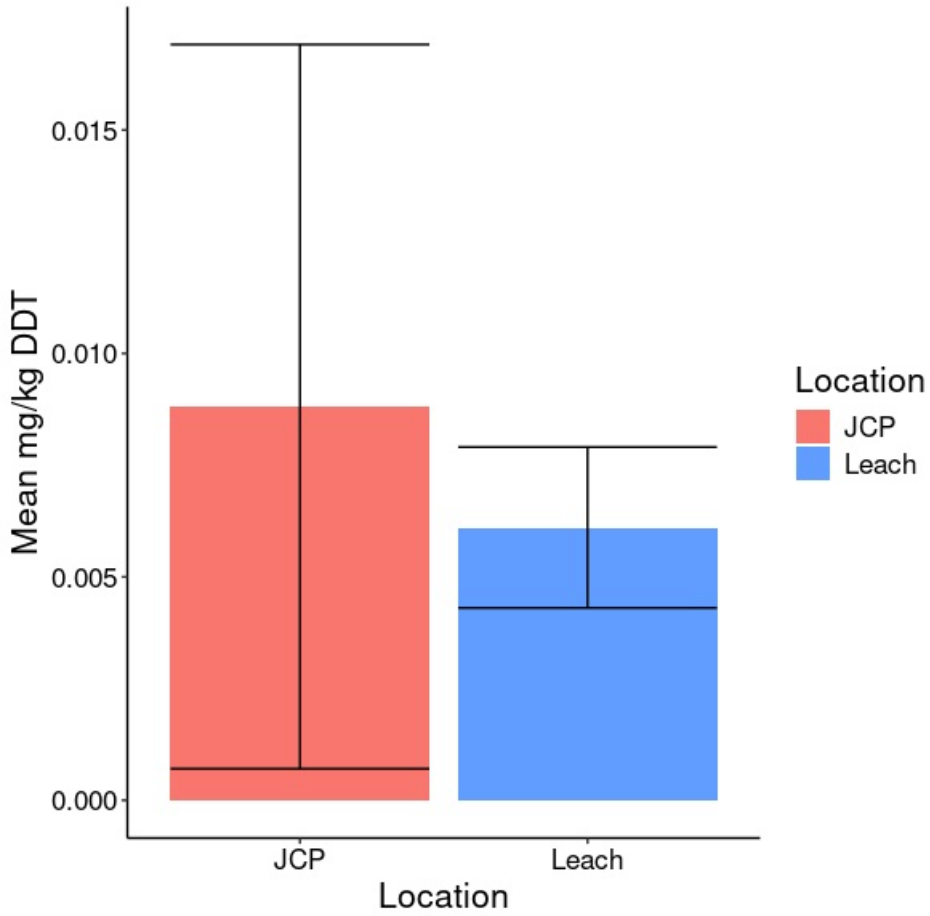
2: Johnson Creek Property on Luther Rd.

3. Mill Creek Park

★ **I-205 storm drain entry to Johnson Creek**

Lead, copper, & zinc higher downstream of storm drain; Pesticide DDT below Eco-SSL and not different between sites





Summary

- ★ The Reed College Canyon and Johnson Creek Watershed are natural laboratories for environmental sampling & analysis.
- ★ Reed College students are conducting environmental chemistry research projects on legacy and emerging contaminants through our courses, summer fellowships, and senior theses.
- ★ We are open to ideas for new sampling sites and collaborative projects that engage our students in local environmental issues!