Macroinvertebrates on the Little Spokane River

By: Katy Abell and Camille McNeely

Spokane Tribe of Indians


Photo by Stuart Thornton

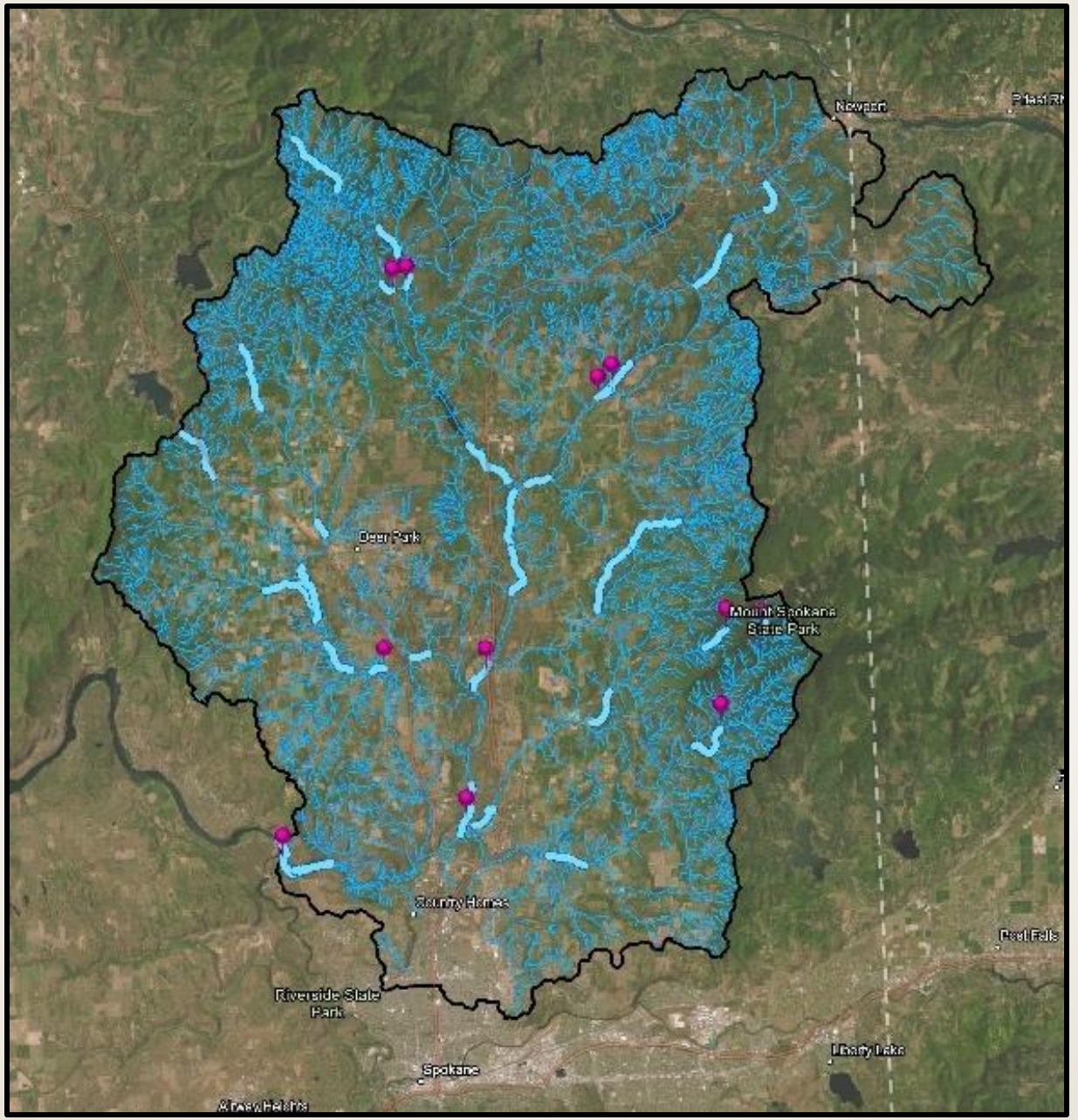

Photo by Sean Zenishek


Photo from the Native Fish Society

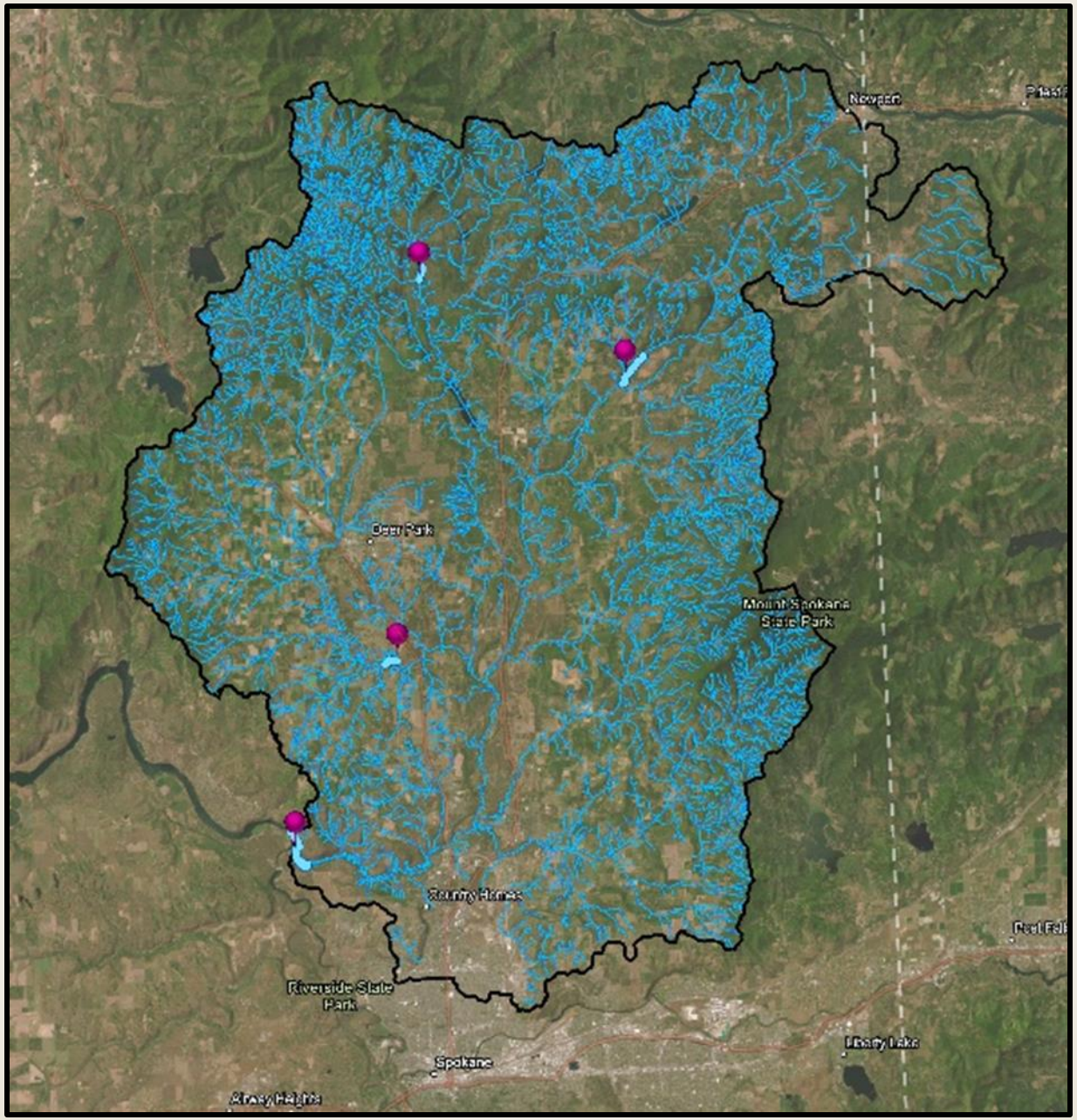
Biological Indicators

- Indicator species
- Diverse adaptations to environment
- Integral for aquatic/terrestrial food web

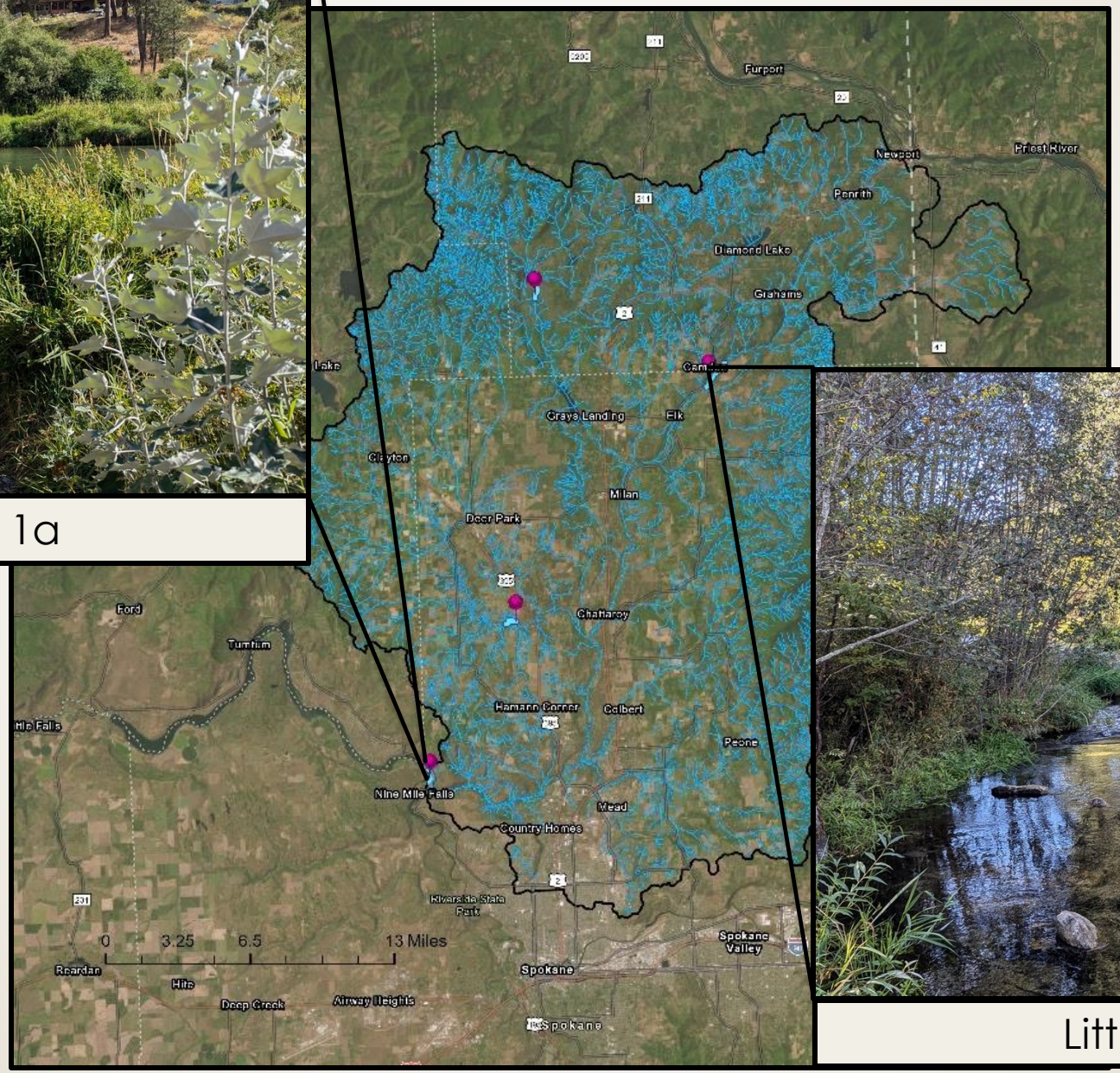
Little Spokane River



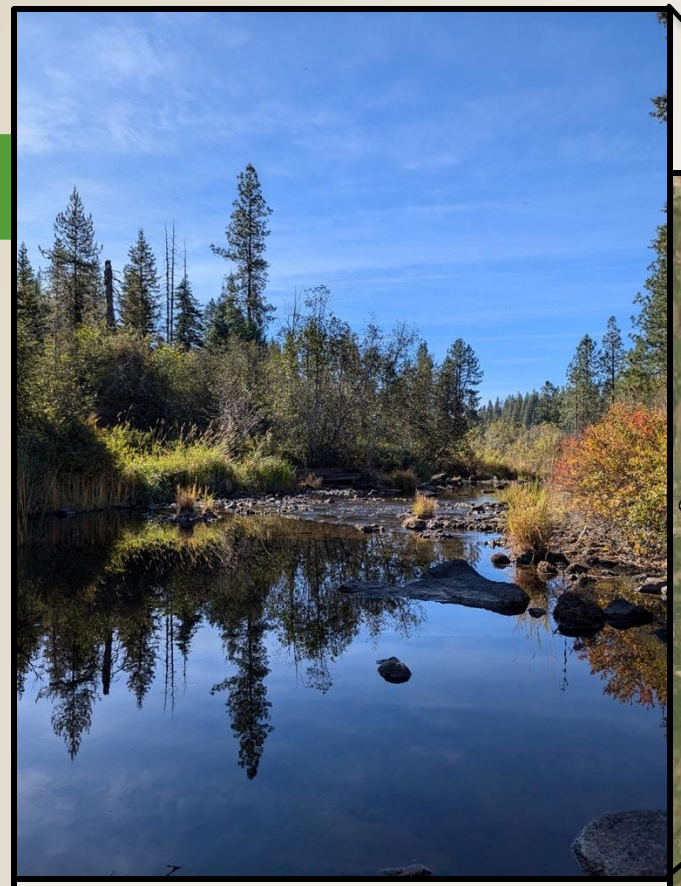
Little Spokane River



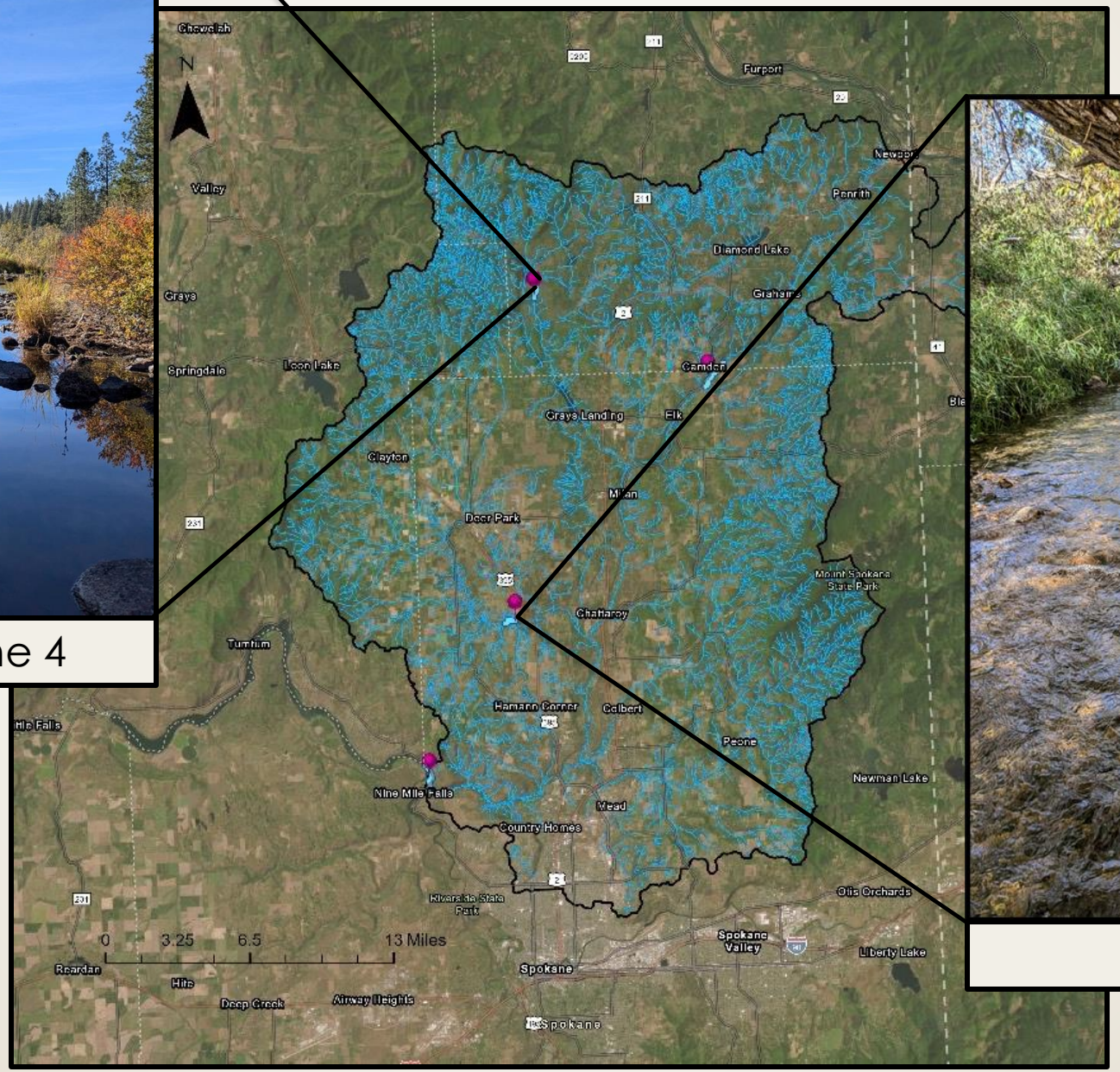
Little Spokane 1a

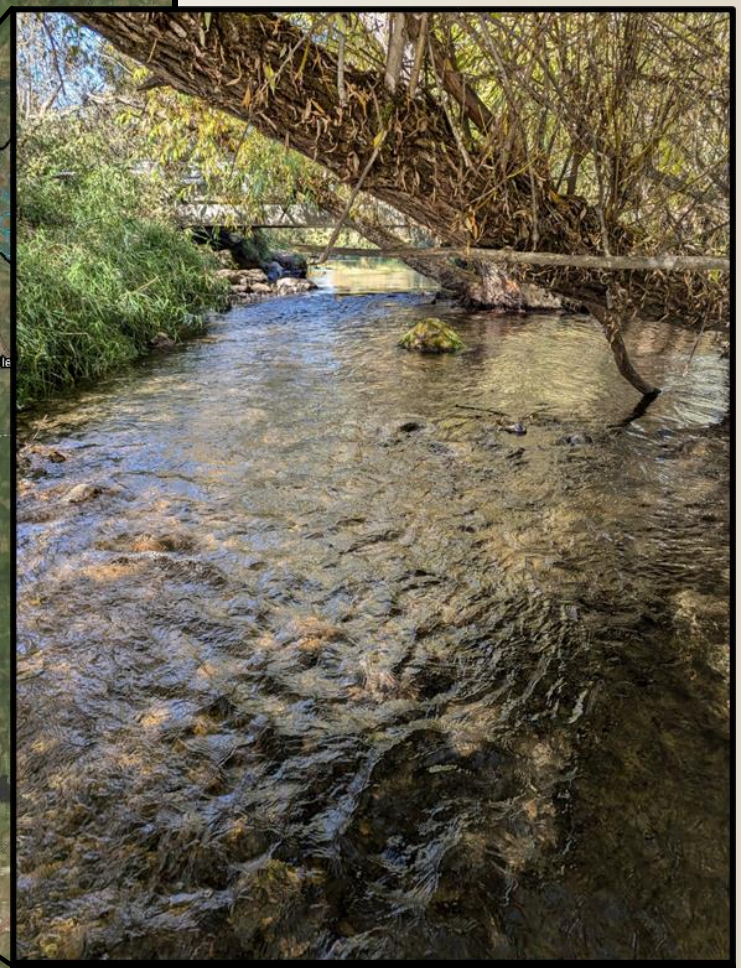


Little Spokane 12



WB Little Spokane 4





Dragoon Creek

Hypothesis:

- Streams with a higher percentage of forest land use will be healthier.
- Streams with higher elevations will be healthier.
- Streams with higher slopes will be healthier.

Land Use

Urban

Suburban

Exurban

Agriculture

Forest

- Inputs into the water
- Changes in water coverage
- Modifications to stream morphology

Elevation & Slope

Little Spokane 1a

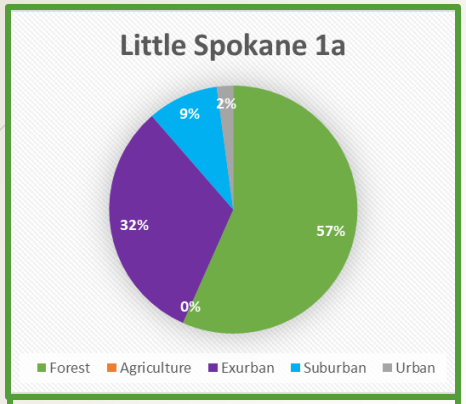
Dragoon Creek

WB Little Spokane 4

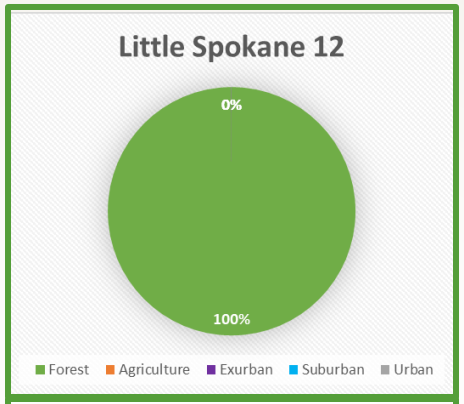
Little Spokane 12

- Increased elevation
  - Lower the temperature → more dissolved oxygen
  - Less plant cover and less vegetation input
  - Usually means smaller stream → shallower streams
- Increased slope → increase velocity
  - Increases oxygen availability
  - Makes stream bed less stable
  - Lowers particulate diversity

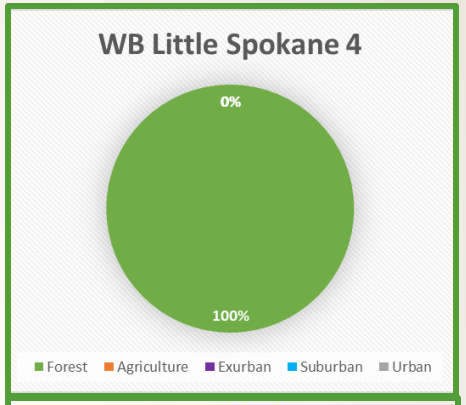
Preliminary Data



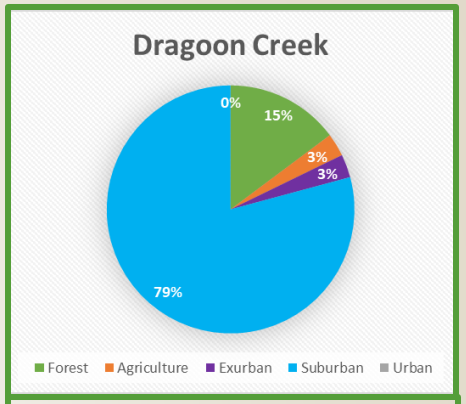
Elevation: 1542 ft
Slope: 7.9 °



Elevation: 1918 ft
Slope: 4.5 °



Elevation: 1982 ft
Slope: 5.6 °



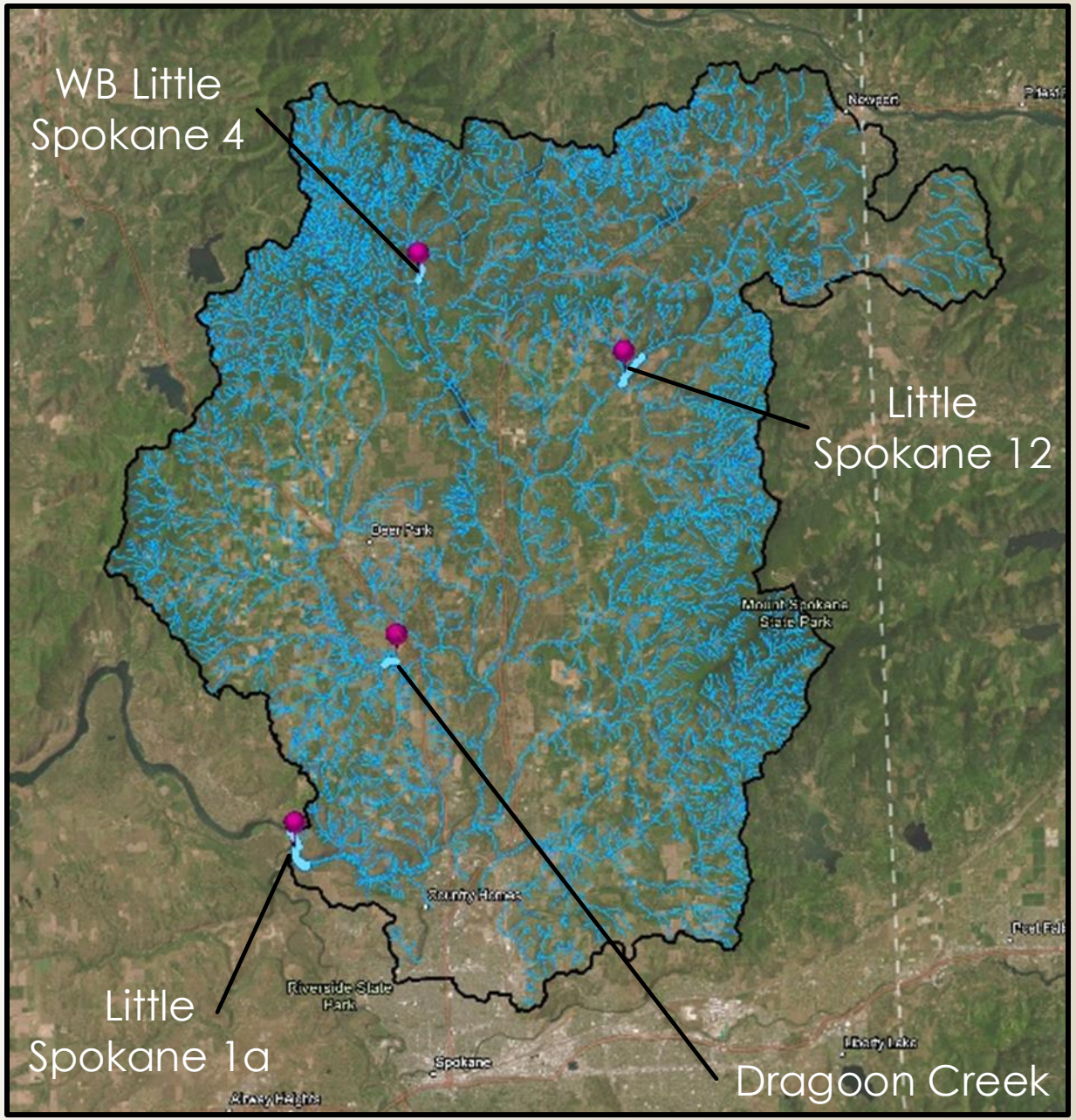
Elevation: 1905 ft
Slope: 7.1 °

Stream Reach	EPT ratio	Taxa Richness	Biotic index	Shannon Diversity
Little Spokane 1a	60%	27	3.92	3.31
Little Spokane 12	61%	30	4.60	2.36
WB Little Spokane 4	37%	26	5.18	2.00
Dragoon Creek	52%	25	4.08	2.42

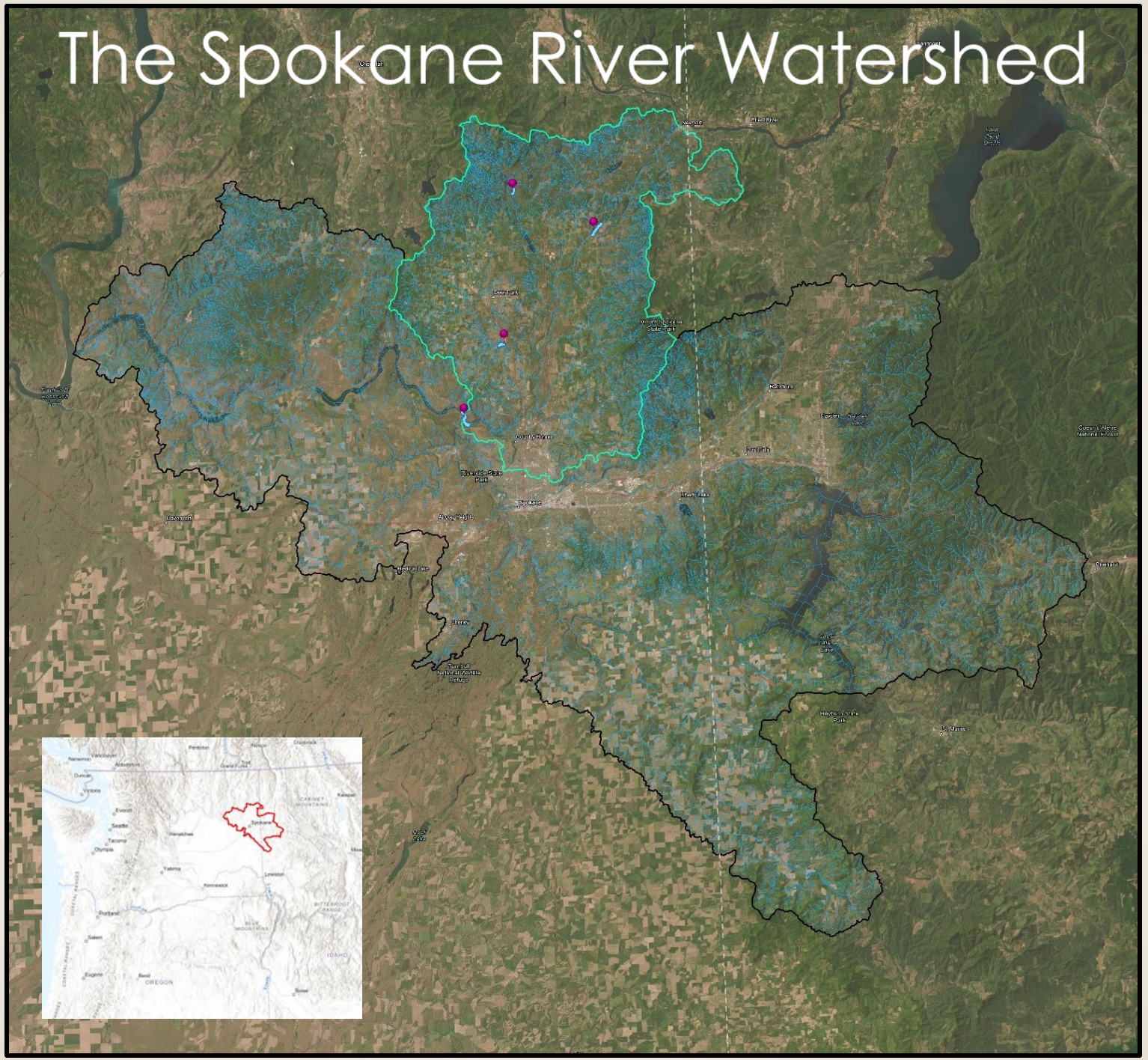
Little Spokane River

Plecoptera
Pteronarcyidae
Pteronarcys

Isoptera
Asellidae
Carcidotea



The Spokane River Watershed



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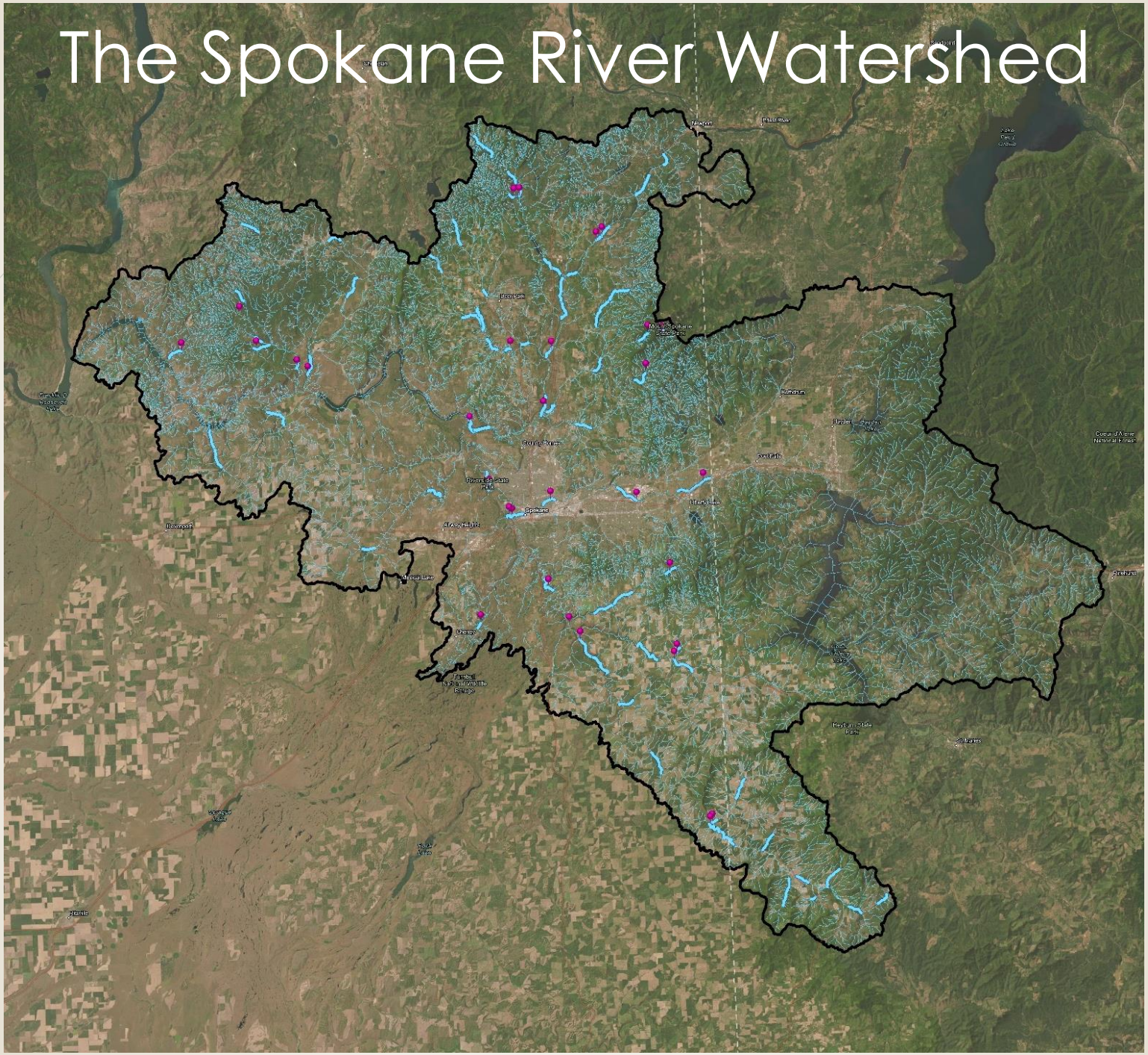

Future Hypotheses:

- Land use
  - The more % forest the higher the invertebrate diversity
- Ecoregion
  - Boreal Forest stream invertebrates will be more diverse than Desert stream invertebrates
- Substrate diversity
  - More diversity leads to higher invertebrate diversity
- Discharge
  - Higher discharge means higher invertebrate diversity
- Velocity
  - Lower velocity means higher invertebrate diversity
- Sinuosity
  - Greater sinuosity leads to higher invertebrate diversity