

ENVIRONMENTAL COUNCIL OF
STATES (ECOS)
2020 ECOS STEP Meeting
Partnering on PFAS
July 29 and 30, 2020

PFAS Fate & Transport, and Technologies for Detecting Groundwater Plumes



Mitch Olson, PE, PhD
Subject Matter Expert, Emerging
Contaminants

ENVIRONMENTAL SOURCES OF PFAS

PFAS PRODUCTION, USE, AND/OR CONCENTRATION POINTS



Aqueous Film Forming
Foam (AFFF)



Industrial Discharge

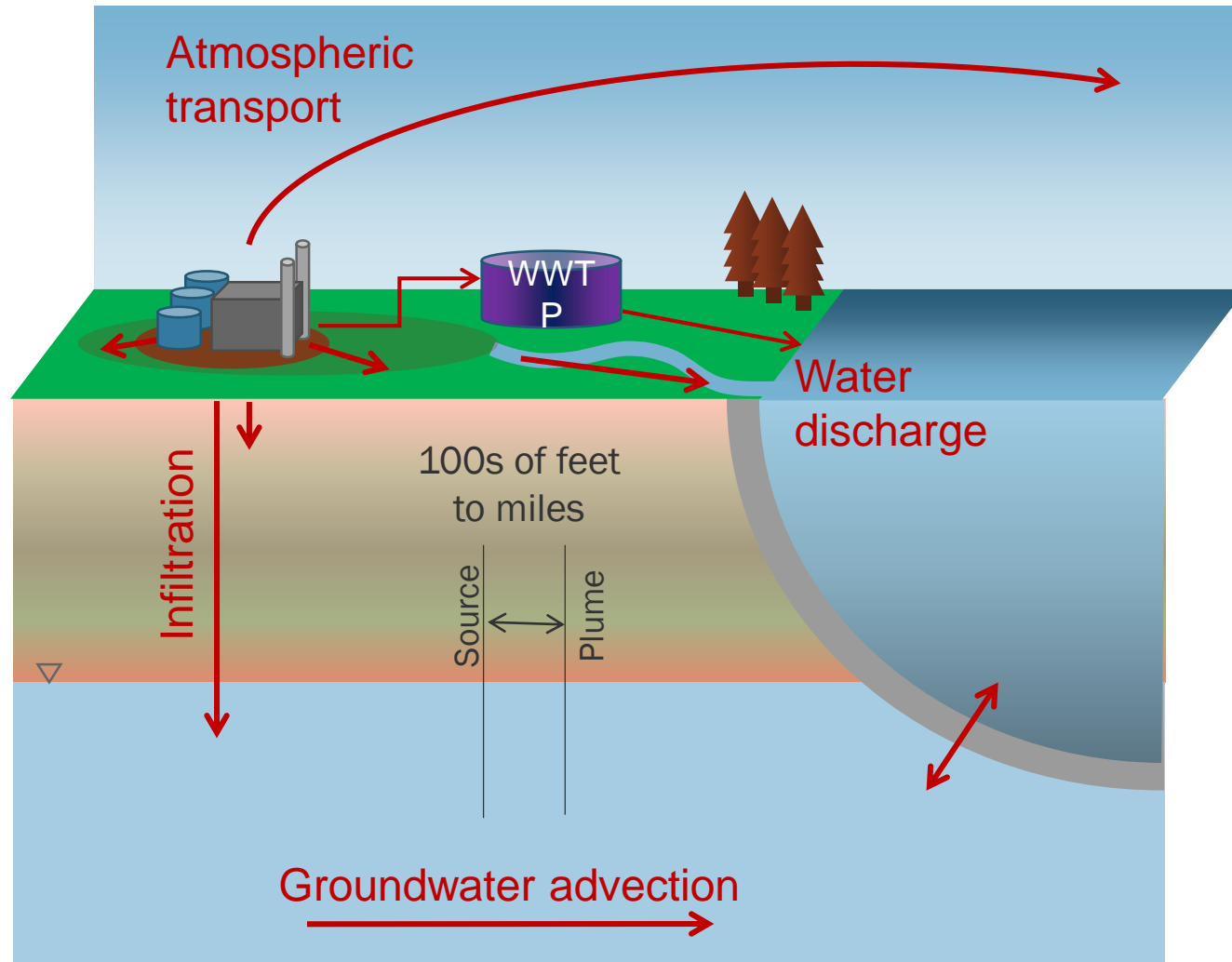


Landfills



Wastewater Treatment
Plants (WWTP)

WHAT HAPPENS TO PFAS WHEN RELEASED?



Primary PFAS Emission Pathways

Atmospheric: local, regional, & global

Infiltration: shallow soils and/or groundwater

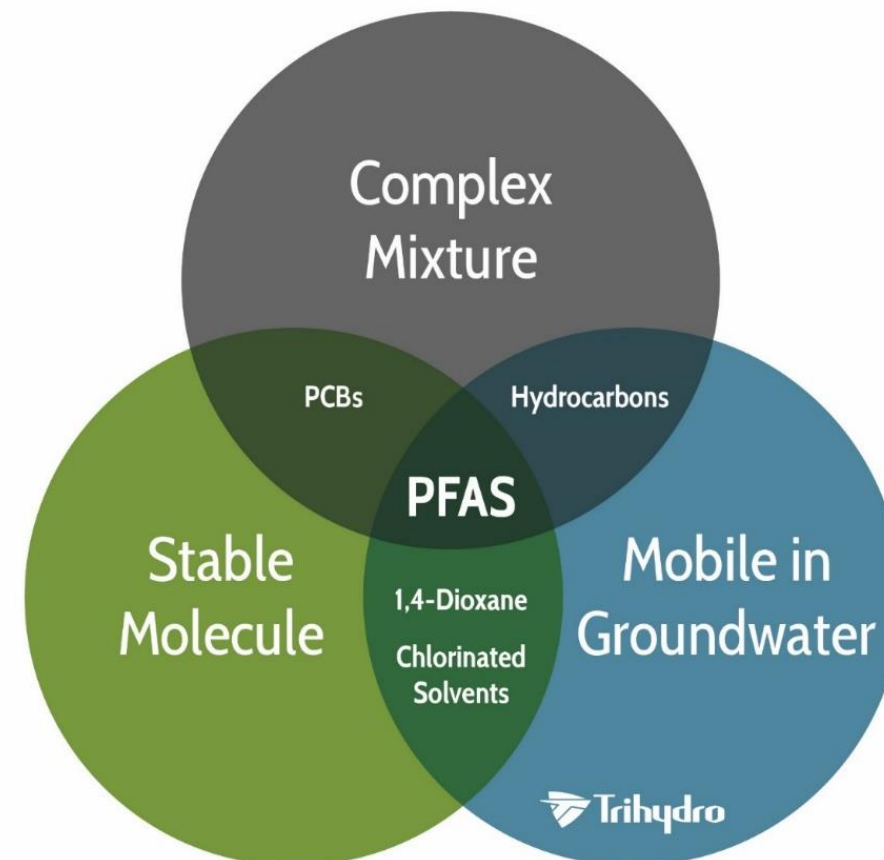
Water discharge: surface spreading, wastewater discharge to WWTP, stormwater runoff

Solid waste: soil impacts, landfills

PFAS IN GROUNDWATER

FATE AND TRANSPORT

- 100s to 1000s of individual compounds
- High mobility
- Complex sorption: surfactant behavior
- Extremely stable: the carbon-fluorine bond
- Transformable...not degradable

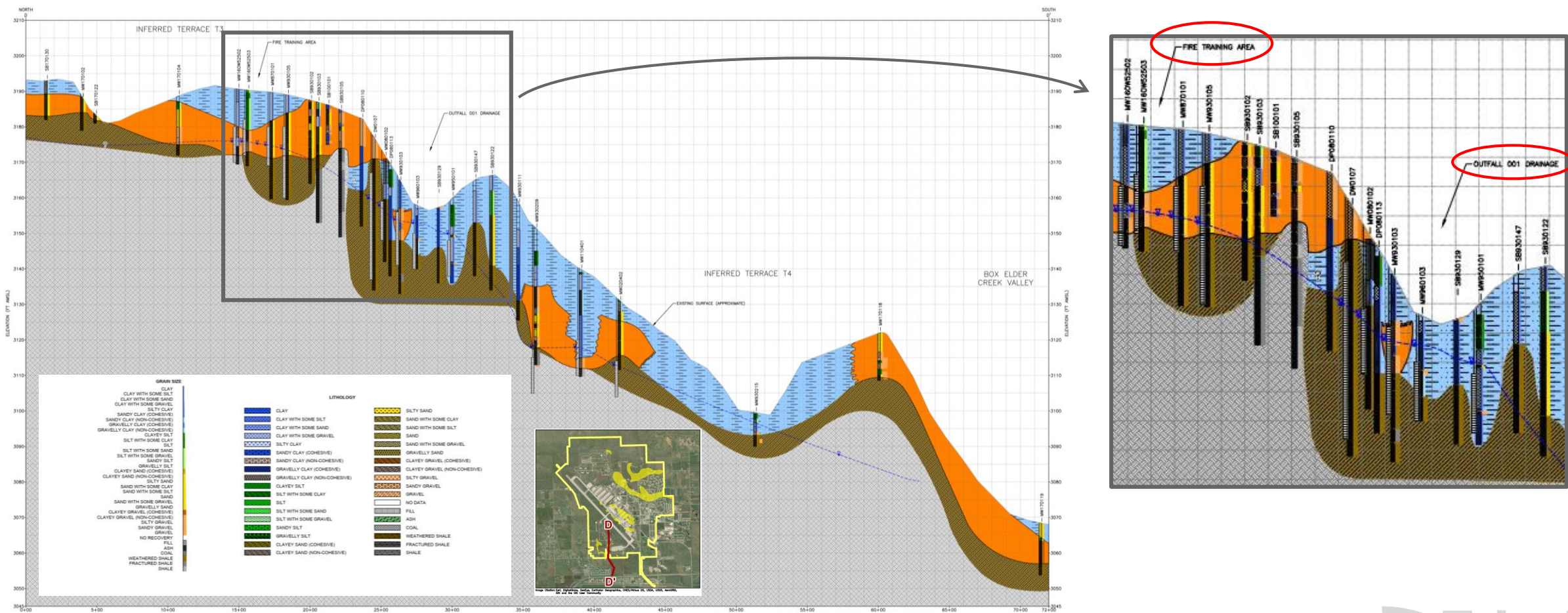


PFAS PLUME DETECTION CHALLENGES

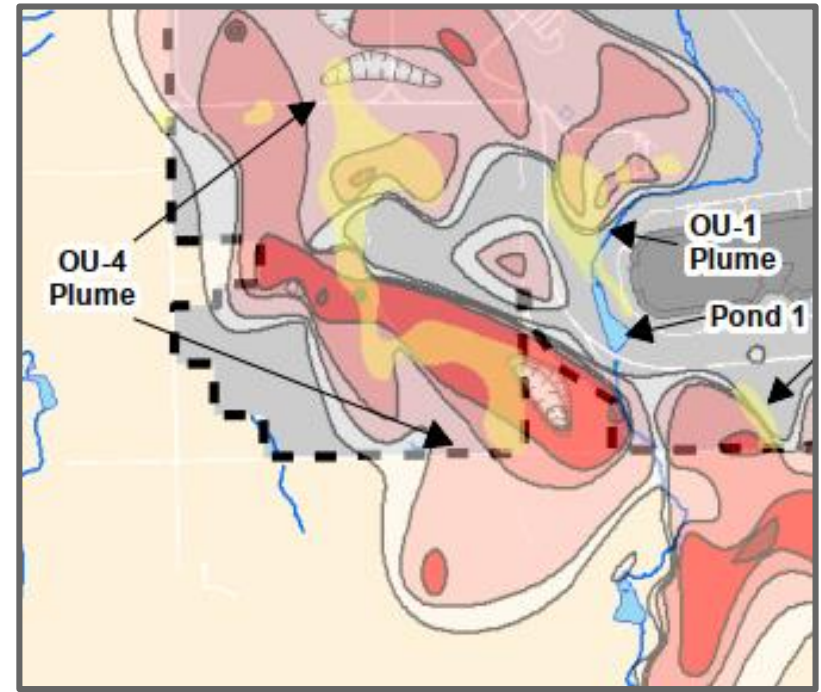
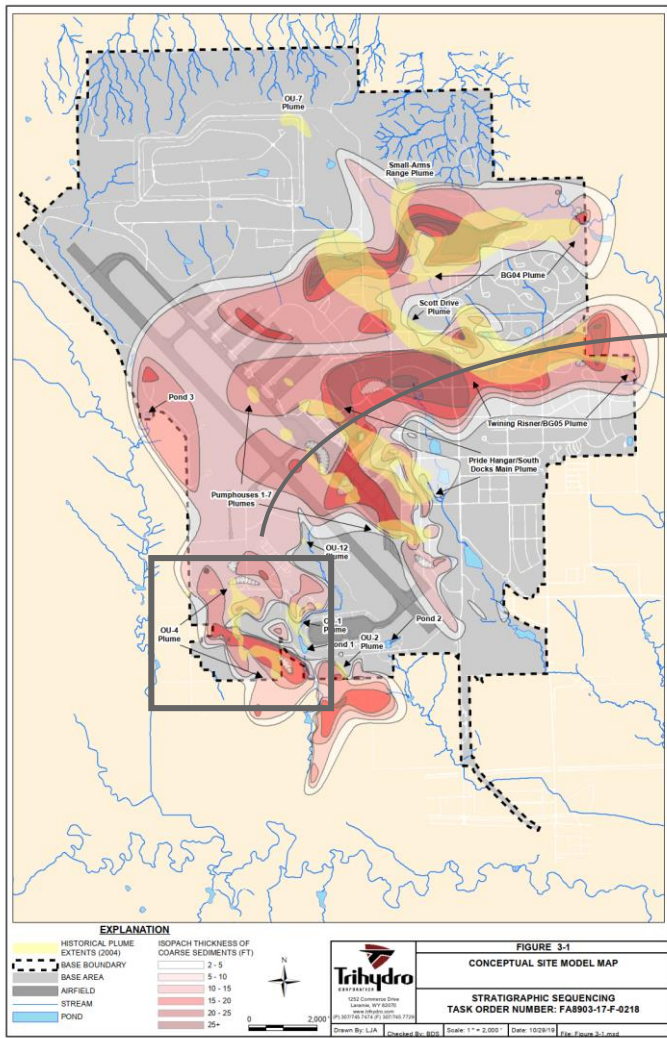
- Where to sample? What media?
- Which PFAS to look for?
- What analytical method?
- What technologies are available for PFAS plume detection?
- Do we really have to sample for PFAS naked? (of course not, but...)



PFAS Sites: Conceptual Site Modeling



PFAS Sites: Conceptual Site Modeling



Primary GW flow direction

- Plume follows stratigraphic changes, not GW flow direction

A firefighter in full gear, including a helmet and jacket with the number '1161' on the back, is pouring a large amount of white foam from a bucket onto a fire scene. The foam is being applied to a structure that appears to be a train car or a similar industrial building. The background shows a cityscape with buildings and a cloudy sky. The overall scene is in black and white, with the foam being the only bright white element.

QUESTIONS

CONTACT INFO

Mitch Olson, PE, PhD

molson@trihydro.com