Evaluating groundwater and contaminant flux using Passive Flux Meters

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Track 1.2
Plume Progression
How do you estimate?

2016 Map

2017 Map

2018 LTS Conference
Empirical methods

- **Passive Flux Meters (Enviroflux)**
  - Measure groundwater flux
  - Measure contaminant flux
  - Can evaluate direction of flow if direction of the flow meter can be controlled during installation
  - Evaluation of extraction mass removal to optimize capture of contaminants
- **Electrical resistivity (Willowstick)**
  - Find preferential flow paths in the aquifer
Passive Flux Meters

- Two studies at Pantex
  1. Continued contaminant and groundwater flux into/out of ISB that is dewatering
  2. Evaluation of flow in the southeast lobe of groundwater
Passive Flux Meter Design

- PVC tube with sorbent/tracer mixture, enclosed in a nylon mesh.
- Alcohols are used for the tracer.
- Typically 5 ft in length, with 3 separated intervals.
- More than one can be linked to cover the entire saturated interval.
- Place in well for up to four weeks.
Passive Flux Meter Deployment, Retrieval, and Sampling

- Deployed using rig – attached cable to PFM and lowered into the well.
- Removed two weeks later and stored in walk-in cooler until ready to sample the next day.
Results

• SE Lobe
  ▪ Flux was similar to that predicted for much of the perched groundwater 80-90 ft/yr)
  ▪ Indicates that the plume has not moved as far as would be predicted from evaluation of movement from upgradient well PTX06-1034

• SE ISB
  ▪ Indicates that water and contaminants are continuing to move into the system
  ▪ Indicates that water and contaminants are continuing to also move into downgradient well PTX06-1153
Questions

• Contact Information:

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Willowstick Study

- We will contract with Willowstick by this fall to conduct the electrical resistivity study
- Results are expected by December 2018

- Contact
  - Michelle Jarrett for results/information
  - Willowstick
    - Ryan Blanchard
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