Refining polymer treatment for permeability reduction

- **Challenge:** Tank containment areas must protect groundwater from spills but conventional permeability reduction methods conflict with existing operations presenting costly challenges.
- **Solution:** Liquid polymer treatment requires little or no surface preparation and can achieve near-impermeability with minimal operational disruption. Polymer treatment is expected to result in significant cost-savings to achieve regulatory compliance.
- **Research Goals:** PERF-supported research could refine the polymer treatment method to maximize cost savings and accelerate regulatory acceptance.
    1. **Leachability and degradation testing** – Evaluate potential impacts to groundwater, stormwater, and/or surface water from polymer leaching and degradation to support long-term regulatory acceptance.
    2. **Polymer formulation and sequence –** Develop empirical relationships between soil characteristics, polymer formulation and treatment sequence, and resulting permeability to tailor treatment and reduce the need for site-specific field testing.
    3. **Field-scale polymer application methods –** Evaluate polymer application methods (spray, flooding, etc.) at the site-scale to optimize treatment efficacy, effort, and cost.
    4. **Inspection and maintenance protocols –** Develop methods to inspect and maintain permeability reduction to cost-effectively ensure long-term regulatory compliance.
- **Deliverables:** 1) Polymer leachability/degradation report; 2) Report or peer-reviewed publication on the relationship between soil type, treatment, and treated permeability; 3) Application method report; 4) O&M guide.
- **Cost:** **$250,000** (Goal 1: $60,000; Goal 2: $60,000; Goal 3: $70,000; Goal 4: $60,000)
- **Duration:** **14 months**



